

THE ORIGIN AND DEVELOPMENT OF THE EARLY BRONZE AGE
IN THE
IBERIAN PENINSULA

by

Beatrice M. Blance, M.A.

Thesis for the degree of Ph.D.

submitted to the University of Edinburgh

Edinburgh

May, 1960



TABLE OF CONTENTS

VOLUME I

	<u>page</u>
TABLE OF CONTENTS	I
FRONTISPIECE	XIII
ACKNOWLEDGMENTS	XIV
INTRODUCTION	XVI
A SCOPE OF THE THESIS	XVI
B GEOGRAPHICAL CONSIDERATIONS	XVII
a Position and relief	XVII
b Geology and structure	XIX
c Minerals	XIX
d Climate	XX
e Vegetation	XX
f Fauna	XXII
C HISTORY OF INVESTIGATIONS	XXIII
D THE PRESENT POSITION	XXV
E TERMINOLOGY	XXVI
CHAPTER ONE THE NEOLITHIC CULTURES	
A INTRODUCTION	1
a Cultural groups usually recognised	2
b Grouping adopted here	4
B REGIONAL ANALYSIS OF THE FINDS	6
C IMPRESSED WARE CULTURES	12
a Cardial ware sites	14
b Non-cardial ware sites	28
D /	

	<u>page</u>
D FOSA GRAVE CULTURE	43
E ALMERIA CULTURE	46
F CAVE CULTURES OF MURCIA AND ALICANTE	59
G PORTUGUESE DOLMEN CULTURE	62
H DISCUSSION	70
1 Impressed ware cultures	70
2 Fosa grave culture	84
3 Almeria culture	86
4 Cave cultures of Murcia and Alicante	94
5 Portuguese dolmen culture	101
I CONCLUSIONS	102
 CHAPTER TWO THE COLONIES	
A INTRODUCTION	103
B LOS MILLARES	105
a The site and its excavation	105
b Grave construction and ritual	108
c The settlement	114
d The finds from the graves	115
e Discussion	122
f The finds from the settlement	128
C VILA NOVA DE SAO PEDRO	129
a The site and its excavation	129
b Fortifications	130
c The settlement	131
d /	

	<u>page</u>
d The stratigraphy	132
e The finds	134
f Discussion	145
D MESAS DE ASTA	148
a The site and its excavation	148
b The finds	149
c Discussion	153
E THE TAGUS AREA	154
a The sites and their finds	154
b Discussion	187
F SOUTH PORTUGAL AND THE GUADALQUIVIR	210
a The sites and their finds	210
b Discussion	213
G ALMERIA	216
a The sites and their finds	216
b Discussion	221
H OTHER AREAS OF THE PENINSULA	223
a Granada	223
b The Levante	227
c The Alentejo and Beira	230
d Salamanca	236
e The North	237
f Cataluna	238
g Monchique	240

	<u>page</u>
I DISCUSSION	241
a Fortifications	241
b Graves	244
c Pottery	247
d Stone	257
e Flint	264
f Bone	265
g Metal	269
h Ships and sailing	275
J CONCLUSIONS	276

CHAPTER THREE THE BELL BEAKER CULTURE

A INTRODUCTION	283
B SITES AND FINDS	287
C ANALYSIS	294
a Beaker distribution patterns and general considerations	294
b Associated finds	301
D DISCUSSION	306
a Summary of views held	306
b Origin of beaker culture	313
c Other beaker relationships	322
d The beaker reflux movement (or horizon)	324
e Physical anthropology	330
f Chronology	332
E CONCLUSIONS	337

CHAPTER FOUR /

	<u>page</u>
CHAPTER FOUR THE ARGARIC BRONZE AGE	
A INTRODUCTION	338
B THE CULTURE OF EL ARGAR	338
a Summary of views held	338
b The site and its finds	340
1. graves	342
2. stray finds	360
c Summary	361
C RELATED SITES IN SOUTH-EAST SPAIN	362
a El Oficio	362
b Fuente Alamo	368
c Zapata	371
d Gatas	373
e Fuente Vermeja	375
f Lugarica Viejo	375
g Ifre	376
h La Bastida de Totana	376
i S. Antonio de Orihuela	380
j Callosa de Segura	381
D DISCUSSION ON THE ARGAR CULTURE	382
E OTHER SITES IN SOUTH-EAST SPAIN	385
a Almeria	385
b Granada and Jaen	386
c Murcia	391
d Albacete	391(a)

	<u>page</u>
F VALENCIA	393
a The site and its finds	393
b Discussion	399
G CATALUNA	403
a The site and its finds	403
b Discussion	405
H SOUTH-WEST SPAIN AND SOUTH PORTUGAL	409
a The sites and finds	409
b Discussion	413
I THE ALENTEJO	416
a The sites and finds	416
b Discussion	421
J THE TAGUS AREA AND BEIRA	422
a The sites and finds	422
b Discussion	424
K NORTH AND WEST SPAIN AND PORTUGAL	427
a The sites and finds	427
b Discussion	433
L THE MESETA	434
M DISCUSSION	436
a Metal types	436
b Gold and Silver	454
c Pottery	460
d Bone and Stone	461
e Burial types	464
f Mining	468
N CONCLUSIONS	469

	<u>page</u>
CONCLUSIONS	
A THE NEOLITHIC CULTURES	473
B THE COLONIES	476
C THE BELL BEAKER CULTURE	477
D THE ARGARIC BRONZE AGE	478
CHRONOLOGICAL TABLE	481

VOLUME II

I	Distribution of copper and tin ores	page
II	The Spanish Kingdom	
	LIST OF FINDS	482
	MAPS	
	FIGURES	
	PLATES	
	BIBLIOGRAPHY	544
VIII	Distribution of stone and bone implements	
IX	Distribution of the Tagus area	
X	Percentage occurrence of beaker pottery types	
XI	The maritime beaker	
XII	The variegated and vesicle beaker	
XIII	The beaker bowl	
XIV	Distribution of beaker segments	
XV	Distribution of foliate points	
XVI	Distribution of w-perforated bottoms	
XVII	Divided beakers	
XVIII	The distribution of bell-shaped	
XIX	The Argaric and related	
XX	Distribution of bronze age axes	
XXI	Trapezoid-shaped axes	
XXII	Distribution of metal points	
XXIII	Distribution of gold and silver objects	

LIST OF MAPS

- I Distribution of copper and tin ores
- II The Spanish Kingdoms
- III The neolithic cultures
- IV The colonies
- V Sites in south-east Spain
- VI Sites in the Tagus area
- VII Imported pottery types
- VIII Distribution of stone and bone containers
- IX Distribution of the Tagus axe
- X Percentage occurrence of beaker pottery types
- XI The maritime beaker
- XII The carinated and meseta beaker
- XIII The beaker bowl
- XIV Distribution of tanged daggers
- XV Distribution of Palmela points
- XVI Distribution of v-perforated buttons
- XVII Riveted daggers
- XVIII The distribution of halberds
- XIX The Argaric axe types
- XX Distribution of bronze age axes
- XXI Trapeze-shaped axes
- XXII Distribution of metal points
- XXIII Distribution of gold and silver objects.

LIST OF FIGURES

- 1 Typical objects found in neolithic contexts
- 2 The main arrowhead types
- 3 Pottery types at colonial sites; 1, a platter; 2, grooved ware; 3,7, imported pottery; 4, a burnished pot; 5, a vessel with three mouths, Vila Nova de S. Pedro; 6,11, spit supports; 8, a figurine, Vila Nova de S. Pedro; 9,10, weights(?).
- 4 1-4, Stone and bone container types; 6,8, stone idol types; 7, a fossil encrinite stem; 10, a Vila Nova cylinder; 9, stone pine cone; 11, stone horn-shaped object.
- 5 1, idol with plano-convex section; 2, stone ball; 3, arched plaque; 4, an idol(?).
- 6 1, arched plaque; 2, lunula; 3, zoomorphic vase.
- 7 1, stone object shaped like cricket bat; 2, stone mattock.
- 8 Flint dagger or halberd types
- 9 Bone pin types
- 10 Colonial metal types
- 11 Beaker culture objects
- 12 Argaric dagger types
- 13 Halberd types
- 14 Bronze age axe types
- 15 1-4, types of bronze age points; 5, trapeze-shaped axe
- 16 Argaric pottery types

LIST OF PLATES

Frontispiece Don Luis Siret and Dr. Leisner (photo Leisner)

- 1 The discovery in Cueva de los Murcielagos
- 2 View over Los Millares
- 3 Plan of grave 5
- 4 Baetyloi beside grave 7
- 5 Grave 5
- 6 The passage and chamber of the grave just outside the settlement wall
- 7 Herring-bone walling in the same grave
- 8 A centrally placed pillar
- 9 Plan of Arribas grave 34
- 10 View of Arribas grave 34
- 11 View of another grave
- 12 Plan of the settlement wall
- 13 A section of the wall in the valley, which has been exposed by erosion
- 14 View of fort 1 at Los Millares
- 15 View of the wall at Vila Nova de S. Pedro (photo Sangmeister)
- 16 Part of the citadel wall from the outside
- 17 Two bastions in the citadel wall (photo Sangmeister)
- 18 The entrance of the later period (photo Sangmeister)
- 19 Sherd of imported pottery (photo Schubert)
- 20 Sherd of imported pottery (photo Schubert)
- 21 Sherds of imported pottery (photo Schubert)
- 22 Sherd of imported pottery (photo Schubert)
- 23 Close-up view of imported pottery, magnification more than x 2
(photo Schubert)

- 24 Sherd of pottery from Vila Nova de S. Pedro (photo Schubert)
- 25 Burnished sherds from Mesas de Asta (photo Esteve Guerrero)
- 26 Pattern-burnished sherds from Mesas de Asta (photo Esteve Guerrero)
- 27 View of Zambujal (photo Trindade?)
- 28 An outer wall(?) at Zambujal (photo Trindade?)
- 29 The tower at Zambujal (photo Trindade?)
- 30 View of Praganca
- 31 The port-hole entrance seen from inside one of the graves at
Palmela (photo Almeida)
- 32 View of a tholos grave from S. Martinho de Sintra
- 33 View of the dolmen Pedra dos Mouros
- 34 View of Almizaraque
- 35 Anta Grande da Comenda da Igreja, side view (photo Leisner)
- 36 Anta Grande da Comenda da Igreja, from the entrance (photo Leisner)
- 37 Pyxides from Pelos (photo Ashmolean Museum)
- 38 Pyxides from Pelos (photo Ashmolean Museum)
- 39 Types of cord-ornamented pottery according to Castillo

FRONTISPIECE

This historic photograph, taken by Frau Leisner in 1933 (or 1934) at Siret's home near Almizaraque, shows the two men whose work on the early bronze age archaeology of southern Spain laid the foundation on which this thesis stands. On the left is Don Luis Siret, who died in 1936; on the right is Dr. Georg Leisner, who died in 1958, aged 88. The writer was privileged to meet Dr. Leisner in Lisbon while working on this thesis.



Acknowledgments

Particular thanks are due to Professor Stuart Piggott, who has truly been a guide, philosopher and friend to the writer during the various stages of the preparation of this thesis. The writer has also benefited from helpful and vigorous discussions with Professor Sangmeister of Freiburg, under whom she studied for one semester, with the late Dr. Leisner of Lisbon and with Mrs. Leisner. She owes a debt to Dr. Siegfried Junghans of Stuttgart and the "Arbeitsgemeinschaft zur Spectralanalytische Untersuchungen", who stimulated and encouraged her interest in the early bronze age metal implements of the Iberian Peninsula. To all the many Spanish and Portuguese archaeologists, who so readily invited her to take part in excavations or gave her permission to study in their museums, the writer's thanks are due, but especially to Professor Almagro, Professor Heleno, Sr. Navasques and Ten. Cor. Paco. She also acknowledges with gratitude the following who undertook special scientific studies of material at her request: Dr. Maria Hopf of Mainz, who identified seeds found in prehistoric sites in the Peninsula, Professor Joseph Frechen of Bonn, who studied samples of pottery from Portugal, and Mr. Bennet McInnes of Edinburgh, who devised a statistical method for analysing certain groups of finds.

Acknowledgments are made to the Ashmolean Museum for permission to use plates 37 and 38.

This study would not have been possible had it not been for the generous support of the Carnegie Trust for the Universities of Scotland /

Scotland, for which she is greatly indebted. They made her a special travel grant for the 1956/57 session and gave her a research scholarship for the two years from 1957 to 1959. She is also grateful to the Instituto de Alta Cultura in Lisbon which, through the British Council, awarded her a scholarship tenable in Portugal for the year 1956/57. It was during the tenure of a scholarship at Barcelona Museum from 1954/55, which had also been arranged by the British Council, that the writer's interest in the early bronze age in Iberia was first aroused.

Special thanks are due to Mr. Whyte, who prepared the line drawings for reproduction.

Finally, the writer would like to thank many friends for their help and encouragement during the laborious task of arranging and writing up the material.

INTRODUCTION

A. SCOPE OF THE THESIS

The scope of this thesis is to examine the origin and development of the bronze age cultures in the Iberian Peninsula, from the beginning of Los Millares until into the Argaric bronze age. It was intended to include the whole Peninsula, excluding the Balearic Islands, but, for various reasons, including the lack of material, the main emphasis is on the southern part. The reason for choosing this particular period was the fact that the area had never been intensively studied as a whole in this connection, though there are many studies on different aspects of it - for example, on the megalithic graves, or on the Argar culture. It was felt that a new survey of the area, from the time of Los Millares until the development of El Argar, would throw new light on the origins of the different cultures, their relationships to one another, and their development pattern.

Before commencing a study of the bronze age cultures, it was necessary to know what had happened during the neolithic in the Peninsula and the thesis, therefore, commences with a brief discussion of the neolithic cultures.

As the thesis concerned the bronze age cultures, especial attention was paid to the bronze implements of the period, the majority of which are unpublished stray finds, and distribution maps were made of these in order to bring out main centres of metal working in the different prehistoric periods.

B. GEOGRAPHICAL CONSIDERATIONS

a. Position and relief

The Iberian Peninsula, comprising Spain and Portugal, lies at the western end of the Mediterranean, between the latitudes 36° and 44° N. It has one land and three sea frontiers. The land frontier is with France and the Continent of Europe, but only the narrow coastal zone on either side of the high Pyrenees is of use for general transit. Therefore, Spain has connecting links with two different land areas, on the west, to Atlantic France, and on the east, to the Midi of France and eventually to the north of Italy. The west and north sea frontiers face Britain and Ireland across the Bay of Biscay and the Atlantic; the south frontier faces Africa, from which it is separated by only a few miles at the Straits of Gibraltar; and the east frontier faces the immediate Mediterranean islands and, ultimately, the eastern Mediterranean.

The Peninsula is not easily penetrable from the east and south due to the narrowness of the coastal plains, which fringe the edge of the high meseta (about 500 m.). In the west there is a wide (and fertile) coastal plain. The rivers do not lend themselves to penetration as they are mainly fast and steep and therefore not suitable for easy navigation, though some of the smaller rivers, e.g., the Andarax and the Almanzora, were probably used for communication. With regard to the longer rivers, it may be said that the Ebro and the Guadalquivir in prehistoric times certainly had swampy and uninviting deltas and the Duero was too fast flowing for penetration, but the remaining two, the Tagus and the Guadiana, may have been suitable /

suitable for navigation (as is indicated by the penetration of passage graves, flat axes, and beaker to Madrid). There are few prehistoric settlements found in river valleys.

Communications overland were also difficult owing to the high mountain ranges which tend to run in an east-west direction (e.g. Cantabrians, Guadarrama, Morena, and Nevada), making north to south communications very difficult. But lower mountain ranges such as the Sierra Morena may have been important for communication between south-east Spain and the Alentejo (the Leisners' theory).

Sea communications were undoubtedly important in early times, as evidenced by the situation of colonies along the coast from Almeria to Lisbon. These, however, must have been conditioned, to some extent at least, by the tides and currents, which are particularly complex in the Straits of Gibraltar area. The main current in both the western Mediterranean and the Atlantic is from north to south (Tauregui, 1949, p.6-104).

Landing would be difficult in many parts of the coast, owing to the high rocky cliffs - e.g. between Adra and Malaga - or to long smooth coastlines with no inlets - e.g. the Alentejo coastline from Aljezur to Setubal.

All these factors would tend to lead to the development of local groups and cultures which would survive independently in different localities into later periods. The difficulty of penetration and the consequent formation of local cultures is very well illustrated by the length of time taken by the Romans to conquer the Peninsula and subdue the many different tribes - nearly 200 years.

b. Geology and structure

Most of the mountain systems in the Peninsula date to the Hercynian mountain-building period, but ranges like the Pyrenees and the Betic Cordillera (including the Sierra Nevada) are due to more recent orogenic action. The Straits of Gibraltar were also formed at this time, the previous 'Straits' having been in roughly the line of the Guadalquivir valley. This means that the whole area is an unstable zone, liable to earthquakes; and, in fact, much of south Spain is being uplifted and some parts have risen 800 m. since Pliocene times. This has given rise to an increased erosion, the result of which is to be seen in the blocking of river valleys by erosion debris - e.g. the river Andarax, navigable as far as Pechina - Benahadux in the tenth century A.D. is now a mere stream. Increased erosion may have led also to increasing barrenness of lands such as in the province of Almeria, where many early settlements are found.

Hernandez Pacheco (1947, p.20ff) divides Spain into three areas on the basis of the type of soil : 1) silicea, 2) calcarea, and 3) arcillosa. He states that these areas are characterised, in modern times, by animal herding, forest, and agriculture respectively.

c. Minerals

Owing to her geological formation, Spain is rich in minerals, a fact which was no doubt appreciated by the early bronze age inhabitants. A brief outline of the main resources will be found in Hernandez Pacheco (1947, p.36-44), and a more detailed study in Calderon (1910), and also in Gomez (1895), and Amilicar (1930). It will be seen from these that surface deposits of copper occur in nearly every province, but /

but tin is more restricted in its distribution and is found more in the north-west. Thus it is not possible to say which areas are likely to have been most settled because of the high percentage of copper ores available in them. There can, however, be no doubt that the main pattern of settlement, especially in the Argaric bronze age, was conditioned by the presence, or absence, of easily accessible ores.

d. Climate

North and west Spain comes under the Atlantic climatic type and south and east Spain under the Mediterranean climate. Central Spain has a sub-continental climate type, with cold winters and hot summers. Climate would obviously affect the local vegetation and also, to some extent, control the type of agriculture practised.

e. Vegetation

Pollen analysis is still in its infancy in Spain (Menendez Amor, 1957), and a big difficulty has been to obtain samples with the pollen still preserved. An excellent study of the present vegetation of the Peninsula and its implications with regard to previous climates, was made by Font Quer (1954), but this probably refers to major climatic changes, such as the last glaciation rather than to the minor changes noticeable since then.

With regard to the historical record, there is evidence that Spain once had much more forest than it has now. Much of it was destroyed in the sixteenth century for the building of ships. Hernandez Pacheco (1955, p.13) refers to the story of the ape which could travel from the Pyrenees to Gibraltar without touching the ground /

ground as a myth, partly because climatologically and geologically Spain falls into the class of pseudo-steppe country and not forest. He cites Roman writers such as Strabon, who referred to many parts of Spain as barren and to Murcia, Cartagena, and the Almeria region as 'Spartarium Campas', for so they were called by the Romans. Font Quer (1954, ch.14), however, believes that the Iberian Peninsula would be almost completely covered with woods, if it were not for the intervention of man; he therefore believes that the Duke of Almanzan's ape could have travelled from one end of Spain to the other without touching the ground. Hernandez Pacheco (op. cit.) also believes that deforestation of the south-east of the Peninsula is modern and occurred mainly during the nineteenth century. Carboneras (Almeria) originated as a centre for charcoal burners who, removing the trees, also incidentally removed the tierra vegetal (humus).

Finds of seeds and grains have been made at various early bronze age sites but comparison is difficult because there appears to be little or no standardisation of names employed for the various plants. The following do occur (Tellez and Ciferri, 1954; Santa Olalla, 1946, p.35-45; do Paco,). (Seeds from Lugarico Viejo, Chibanes, Rotura, Assenta, were studied by Dr. Hopf of R.G.C. Mainz at the request of the writer.)

Wheat: *Triticum aestivo-compactum* (Schiem) : Almizaraque, Assenta, Chibanes, Montanyeta de Cabrera.

Triticum Sphaerococcum : Vila Nova de S. Pedro.

Emmer: *Triticum Dicoccum* (Schbl.) : Almizaraque, Chibanes, Rotura.

Barley: /

Barley: *Hordeum Vulgare* L. *polystichum* : Assenta.

Hordeum Vulgare L. *polystichum* var *nudem* : Rotura.

Hordeum Vulgare *Hexastichum* : Almizaraque.

Hordeum Sativum L. : Montanyeta de Cabrera.

Hordeum sp. : Vila Nova de S. Pedro.

Bean: *Vicia Faba* : Almizaraque, Vila Nova de S. Pedro,
Lugarico Viejo.

Flax: *Linum Usitatissimum* : Almizaraque, Vila Nova de S. Pedro.

Prunus Avium L. : Vila Nova de S. Pedro.

There are records of finds of grape and olive remains at Morro del Barsella and El Pany (San Valero, 1942, p.98) despite the assertion by one authority that the olive was probably introduced into Spain by the Phoenecians (Rikli, 1943, p.55).

f. Fauna

Bones of most domesticated animals have been found at early bronze age sites - sheep, goats, cattle, horses, and pigs.

At Vila Nova de S. Pedro, the following bones have been found :-
Capra, *Equus* (abundant), *Asinus* (rare), *Canis* (rare), *Cervus* (abundant), *Sus scropha* (abundant), *Lupus*, *Ursus*, *Hystrix*, *Lynx*, *Meles taxus*.

The following shells were also found - *Patella*, *Tapes*, *Cardium*, *Pectunculus*.

How far these were domesticated, especially the horse and the pig, or how far they were just hunted, is not known. It would be interesting to know if swine-herding played as big a part in the Alentejo economy of the bronze age as it does today, because there the various types of oak provide good food supplies for pigs.

C. HISTORY OF INVESTIGATIONS

It is a curious fact that most of the chief investigations into the prehistory of Spain have been by foreigners - e.g. Cartailhac, Aberg, Siret, Bonsor, Obermaier, Schulten, and the Leisners. For the period under discussion here, the work of Siret and the Leisners is of vital importance, though Cartailhac and Aberg give useful information in their surveys of Peninsula prehistory.

There were two brothers Siret - Henri and Luis - who were mining engineers living in south-east Spain at Herrerias. Don Luis, as he is still referred to by local people, was obviously passionately interested in the prehistory of the area in which he lived and he engaged workmen to carry out investigations for him at many sites, which included four major settlement sites, El Argar, Los Millares, Almizaraque, and Villaricos, and innumerable graves (probably over one thousand). It is unfortunate that he was able to publish only a small proportion of his excavations because the descriptions and reports are of a high standard and can still be used as source material today. He published quite a lot of his theories of the development of the cultures in south-east Spain and elsewhere. His studies, based on the typology of the objects found in his various excavations, are basically accurate, but his chronological interpretations were wrong, as he linked Los Millares with Mycenaean contact and El Argar, he considered was due to the Celts.

The Leisners, as the result of a suggestion by Obermaier, began a survey of the megalithic graves in the whole Peninsula. They met D. Luis Siret and were able to publish many of the graves which he had excavated /

excavated and to discuss his views with him. As a result of their study of many graves and their contents in south Spain, they were able to devise a typological series for the graves whereby they distinguished basically between round graves and rectangular graves. They also made a distinction between the megalithic or the erected standing stone construction found mainly in dolmens, and the cyclopic or laid mass construction of round graves. The origin of the passage they thought might be in the megalithic graves where the standing stones, inwardly inclined, require a capstone to keep them from falling in and thus a passage to gain access became necessary. Whether the appearance of the passage in the big round graves is due to this or is brought independently from the eastern Mediterranean was uncertain to them.

They studied and checked Siret's material and theories and believed that round graves with small or medium diameters and rectangular cists of non-megalithic construction without passages were typical of Almeria I and II. By their study of the Los Millares grave finds, they were able to divide the culture into two phases. They were also able to show relations by sea or by land between the east and west of the Peninsula. Their views are too complex to summarise here but reference will be made to them in the course of the discussion.

Bosch Gimpera, since his flight to Mexico, has been unable to take such an active part in the archaeology of the Peninsula as he did.

Castillo, noted for his work on beakers, continues to collect more material for a new catalogue, though his views have changed little /

little since his important publication in 1928.

In Portugal, the chief archaeologists of the last century, Leite de Vasconcellas, Estacio da Veiga, Marques da Costa, Carlos Ribeiro, and Santos Rocha, seem with one or two exceptions to have been more concerned with the setting up of museums than with the publication of their finds. At the present day, archaeological excavation is mainly in the hands of the geologists and other amateurs.

D. THE PRESENT POSITION

The majority of finds in Portuguese and Spanish museums are unpublished or inadequately published and for this reason it is not always easy to get permission to make detailed notes and drawings of interesting objects.

The Spanish museums particularly suffered during the Civil War (e.g. Archaeological Museum, Madrid) and as a result the material is often lost (e.g. Quimeres material, see p.16) or locked in the cellar in its original packing cases (e.g. the Siret collection). The painting of catalogue numbers on the objects was not customary and thus, if an object became parted from its label, or if the labels were accidentally transferred, the object frequently becomes lost to science. For example, as a result of this there are numerous stray finds on display in the Archaeological Museum in Madrid, one of which is the famous dagger from Los Millares 57. The identity of this object was pointed out to the Museum's Director who showed remarkably little interest.

In the same Museum, a large shelf label proclaims that the finds in /

in the case are from the dolmens of Salamanca, when, in fact, some of these are from Mergelinas' excavations in Granada. Even if finds are numbered, they are frequently mixed with others (e.g., the material from Rotura and Chibanes in the Ethnological Museum in Lisbon, or the material from the caves of Mujer and Murcielagos in the Archaeological Museum in Madrid).

Excavations or published reports of a site frequently give a different inventory from that on display in the museum (e.g. Palmela) and also two reports of the same site may be inconsistent (e.g. Alapraia), or finds from two or three graves at the one site will not be separated (e.g. S. Pedro de Estoril). Sometimes it is even difficult to correlate the actual object with the published drawing (e.g. Viana, 1955, 1957, etc.).

With regard to the published evidence, it is remarkable how seldom the actual find spot, associations, or stratigraphy of any object is given. Thus any study of prehistory in the Peninsula must be based on typology and comparisons of find assemblages. It is only rarely that one can state categorically that a particular object was found in a particular level (e.g. the imported ware at Vila Nova de S. Pedro).

In this respect the source material used in the present thesis is obviously inadequate, and the correctness of its conclusions depends on the study and comparison of large areas and many sites.

E. TERMINOLOGY

Reference to different areas in the Peninsula will be made in terms of the old Spanish kingdoms, because they form adequate geographical /

geographical and cultural entities. In the case of Almeria which is a very important area, however, it will not be referred to as Andalucia, but either as south-east Spain or as Almeria.

In Portugal, the areas will be known by the present provincial names with the difference that Alto and Baixo Alentejo and Beira will be referred to simply as the Alentejo or as Beira. In the case of the province of Estremadura in Portugal, in order to save confusion with the Spanish province of Extremadura and also for the sake of simplicity, the region will be referred to as the Tagus area.

If by any chance a name like Valencia is used to include only the present day province, this will be indicated by the use of the word "province".

Most of the sites in the Peninsula referred to in the text will be found on the maps at the back. Two large scale maps of the Tagus area and south-east Spain show all the sites of all dates from these two important areas which are dealt with in the text.

Many Spanish archaeologists have their own particular terminology which leads to considerable confusion when comparing the views of different writers. As none of the systems is really adequate, none has been adopted here. Instead, the following terms have been used to indicate the chronological position of the culture or object in question.

Early bronze age. This is used to describe the phase when metal was introduced into the Peninsula. This refers to sites such as Los Millares, Vila Nova de S. Pedro, Alcala, etc. This phase may also be referred to as the colonial phase because the main sites are regarded /

regarded as being colonies established from the east Mediterranean. At some of these sites it was possible to distinguish two levels of occupation. Reference to these levels has been contracted to L.M. I and II, V.N.S.P. I and II, etc. When these contractions are used in a chronological sense it indicates contemporaneity with the particular level at the particular site.

Beaker times. This includes everything from the end of the colonial phase (or early bronze age) until the beginning of the El Argar culture.

Argaric bronze age. The term is used in the earlier chapters to denote the period during which the Argar culture was flourishing in the south-east of the Peninsula. It is never used in a cultural sense to indicate relationship with El Argar. In the chapter on El Argar this term is replaced by bronze age in order to avoid any confusion between the chronological and cultural significance of the term Argaric bronze age.

It is realised that this system is also very inadequate, and it is not used with a view to introducing yet a further set of chronological terms but rather in order to avoid any possible confusion in the meaning of existing ones.

There is slightly more consistency about the use of cultural names in the Peninsula, though there is still some confusion. In the present study the best known and/or the most logical cultural labels have been kept; for example the term cardial and non-cardial impressed ware culture has been preferred to the terms cave culture or Hispano-Mauritano culture, because this conforms to international usage /

usage and is a more accurate and descriptive term. At certain sites such as Los Millares, Vila Nova de S. Pedro or El Argar, where two distinct cultural phases have been recognised, the contractions L.M. I and L.M. II or El Argar A and B can be used when considering related material to denote a cultural connection with whichever phase is referred to.

The words bronze and copper have been used rather loosely in this study because only in very few instances, which are specifically referred to, is it known whether an object was of copper or of bronze. Generally speaking, it looks as if bronze came into use during the Argaric bronze age. It is scarcely attested before that time.

CHAPTER ONE. THE NEOLITHIC CULTURES.

A. INTRODUCTION

A brief study of the neolithic cultures of the Peninsula is necessary before the significance of the early bronze age cultures can be fully understood.

San Valero apparently made a thorough study of the neolithic cultures, especially the cave cultures, for his doctorate thesis at Madrid University, but his long-promised book on the subject has not yet appeared. He has, however, published various short notes referring mainly to the Valencian caves.

Adequate information regarding the Almerian culture was found in G. & V. Leisner (1943). For the cave cultures the writer has depended mainly on her museum notes. For the Catalan tumbas do fosa reference has been made to several published excavation reports.

The term "impressed ware" has been retained to include all types of impressed ware, including cardial ware. This usage is in conformity with that common in most Mediterranean countries. When impressed ware without cardial impressions is referred to, the term "non-cardial impressed ware", though clumsy, has been used, as this seems to be the most appropriate one.

The term "tumbas de fosa" is also retained, because of its prolonged use for this culture; the culture will be referred to as the fosa grave culture and the graves as fosa graves.

Cultural groups usually recognised

The neolithic cultures in the Peninsula have always been regarded as falling into two groups -- "Almeria culture" and "cave cultures". These have been more recently called "Ibero-Saharian" and "Hispano-Mauritian" by Santa Olalla (1946), who wished to stress the importance of the North African relationship.

The characteristics of the two groups have never been fully defined, but it has been generally understood that the term "Almeria culture" was applicable to plain undecorated pottery and single or collective burial in constructed graves, while "cave cultures" were characterized by impressed wares, habitation and burial in caves, and products of a neolithic flint industry which is related to the microlithic tradition. Thus, for example, the "tumbas de fosa" (with their plain pottery and single burial) in Cataluna were usually referred to as Almerian graves, and were considered as indicative of penetrations by the Almerian culture as far north as Cataluna. The cave cultures were recognized along the coast, but they have been generally considered to be a more specifically inland culture (Bosch Gimpera, 1926).

Difficulties arose, however, when sites such as El Garcel were considered, because here plain ware was found along with evidence of the neolithic flint industry of microlithic character; various suggestions have been made, none of them entirely satisfactory, to explain this site. Similarly, the Portuguese dolmen culture had to be considered separately, because it did not fit either of the main groups, having plain pottery frequently associated with flint trapezes.

The /

The origin of the flint trapeze, an important feature of the neolithic flint industry, is itself a vexed question. It is related to the question of the origin of the microlithic flint industries with trapezes of mesolithic date in the Peninsula. Obermeier held the view that the microlithic tradition of the neolithic was ultimately to be derived from the Capsian culture, while Mencke (1938) believed that these two were independent developments. It may be noted (vide Vauffrey, 1955) that the trapeze is typical of the "Capsian Typique" culture, which has a limited distribution in the eastern region of North Africa (the region of Gafsa), while the succeeding "Ibero-Maurusian" phase which spread westwards along the African coast was remarkably poor in microliths and particularly in trapezes. It was not until the "Capsian de tradition neolithique" culture arrived in that area, the western part of North Africa, that the trapeze occurred commonly; and this is too late to explain the occurrence of the trapeze in the Spanish mesolithic cultures. More recently, Barriere (1956) has suggested that the mesolithic cultures of Spain were influenced by the "Sauveterro-tardenoisienne anciennes" of France, though the evolution in Spain was not parallel to that in France. Clarke (1958), however, basing his argument on Milojevic's finds at Otzaki Magula in Thessaly, has put forward the theory that these industries with trapezes represent a pre-pottery neolithic phase in Europe.

This problem cannot be resolved until a detailed study of the mesolithic industries in the Peninsula has been made, and their dating in relation to the neolithic industries is fixed. Trapezes are known, in small quantities, in the shell mounds at Muge (Abbe Roche, 1951, p.131), but /

but pottery sherds were also found at Amoreira in the upper levels of the mound (Russel Cortes, 1952, pl.1). At La Cocina, level I seems to be a Tardinorsian level mixed with neolithic elements (Barriere, 1956, p.150). Finds of flint trapezes in Portuguese dolmens have been taken as indicative of a high antiquity for those graves (Heleno class notes).

Grouping adopted here

Because of the difficulties encountered by the usual classification and in order to arrive at some solution to them, it was decided to consider the neolithic cultures of the Peninsula as a whole, using only the obvious regional divisions, and to investigate which features were widespread and which were restricted to one or more of the regions.

The regional distributions which were used are listed in Table 1, with the number of sites in each of the regions. There are 363 sites in all which are considered to be neolithic. It will be noted that in the case of Cataluna and Portugal two groups of sites are given; it was considered that the evidence for a cultural difference between these sites was sufficiently obvious for such a sub-division to be made. For Almeria also two groups are given because it was considered desirable to separate the settlement and grave sites.

TABLE 1 Regions of the Peninsula and number of sites.

<u>Ref.</u>	<u>Region</u>	<u>Sites</u>
CF	Cataluna tumbas de fosa	30
CC	Cataluna caves	15
VC	Levante caves, etc.	16
AG	Almeria graves	151
AS	Almeria settlement	3
SS	South Spain caves, etc.	12
HG	Huelva graves	13
RG	Reguengos graves	26
AD	Alentejo dolmens	41
PG	Central and North Portugal graves	20
PC	Central and North Portugal caves, etc.	36
		<hr/> 363

B. REGIONAL ANALYSIS OF THE FINDS

The finds in these sites are considered in Table 2. The number given in each case is the number of sites at which the item concerned was found. To give a better presentation of the figures for the purpose of comparison between sites they have been expressed in Table 3 as percentages, each figure being the percentage of sites in the regions at which the object concerned was found. Some of the information contained in this table is worthy of comment.

With regard to pottery, the simple hemispherical bowl is the commonest type, and plain ware is to be found in all groups, though it is obviously less common in the cave finds than in finds from dolmens. Cardial and non-cardial impressed wares are confined to certain regions (Cataluna, Levante, and Central Portugal for cardial; and Cataluna, Levante, South Spain, and Portugal for non-cardial - see Map No.3). Bag-shaped pots and amphorae (Fig.1, No.19-22), with the exception of those from Almeria, are almost entirely confined to areas where impressed wares are known. In Almeria a special form of amphora is found (Fig.1, No.15), which differs from the impressed ware type in its lack of handles or lugs and in the type of neck it has. Platters (Fig.2, No.1) seem to be a feature of the Portuguese dolmens. Other features such as the two-handled bowl or the spout (Fig.1, No.18) seem to have a regional distribution and are thus of great importance for indicating cultural relationships.

Stone axes /

TABLE 2 Occurrence of finds.

Object : Region:	CF	CC	VC	AG	AS	SS	HG	RG	AG	PG	PC
Cardial ware	1	6	6	-	-	-	-	-	-	-	8
Non-cardial impressed ware	-	6	3	-	-	10	1	-	-	-	16
Hemispherical bowl	2	1	3	29	1	3	8	22	12	8	17
Bag-shaped pot	3	4	6	-	-	6	2	1	-	-	12
Amphora	1	3	3	9	-	3	-	-	-	-	2
Two-handled pot	7	-	-	-	-	-	-	-	-	-	-
Platter	-	-	-	-	1	-	6	4	1	-	-
Spout	-	-	2	-	-	2	-	-	-	-	-

Stone axe	19	7	9	26	3	4	12	17	29	11	22
Flat idol	-	-	4	14	-	3	4	1	-	1	-
Stone bracelet	-	-	3	3	3	6	-	-	-	-	-
Shell bracelet	-	6	-	24	1	-	-	-	-	-	1
Olive-shaped callais bead	18	-	3	5	-	1	-	-	5	1	3
Disc-shaped callais bead	3	-	1	-	-	-	-	-	-	2	1
Slate plaque	-	-	-	-	-	-	6	14	14	1	9

Flint blade	16	6	11	48	3	6	11	18	23	12	21
Simple trapeze	5	-	4	17	1	1	3	3	-	1	4
Asymmetrical trapeze	1	-	4	34	1	-	8	11	9	4	16
Tanged arrowhead	3	1	11	19	2	1	-	-	-	-	5
Hollow-base arrowhead	-	-	2	8	-	1	8	15	6	7	19
Leaf-shaped arrowhead	1	2	10	-	2	2	-	4	5	7	15

Bone point	5	10	7	35	1	5	-	1	-	-	19
Grooved pendant	-	-	4	-	-	-	-	-	-	-	-
Bone spoon	-	-	2	-	-	1	-	-	-	-	-
Comb	-	-	2	-	-	1	-	-	-	-	1
Shell bead	-	-	4	-	-	1	-	-	-	-	-

TABLE 3 Percentage occurrence of finds.

Object : Region:	CF	CC	VC	AG	AS	SS	HG	RG	AG	PG	PC
Cardial ware	3	40	38	-	-	-	-	-	-	-	22
Non-cardial impressed ware	-	40	19	-	-	83	8	-	-	-	44
Hemispherical bowl	7	7	19	19	33	25	62	85	29	40	47
Bag-shaped pot	10	27	38	-	-	50	15	4	-	-	33
Amphora	3	20	19	6	-	25	-	-	-	-	6
Two-handled pot	23	-	-	-	-	-	-	-	-	-	-
Platter	-	-	-	-	33	-	46	15	2	-	-
Spout	-	-	13	-	-	17	-	-	-	-	-

Stone axe	63	47	56	17	100	33	92	65	71	55	61
Flat idol	-	-	25	9	-	25	31	4	-	5	-
Stone bracelet	-	-	19	2	100	50	-	-	-	-	-
Shell bracelet	-	40	-	16	33	-	-	-	-	-	3
Olive-shaped callais bead	60	-	19	3	-	8	-	-	12	5	8
Disc-shaped callais bead	10	-	6	-	-	-	-	-	-	10	3
Slate plaque	-	-	-	-	-	-	46	54	34	5	25

Flint blade	53	40	69	32	100	50	85	69	56	60	58
Simple trapeze	17	-	25	11	33	8	23	12	-	5	11
Asymmetrical trapeze	3	-	25	22	33	-	62	42	22	20	44
Tanged arrowhead	10	7	69	13	67	8	-	-	-	-	14
Hollow-base arrowhead	-	-	13	8	-	8	62	58	15	35	53
Leaf-shaped arrowhead	3	13	63	-	67	17	-	15	12	35	42

Bone point	17	67	44	23	33	42	-	4	-	-	52
Grooved pendant	-	-	25	-	-	-	-	-	-	-	-
Bone spoon	-	-	13	-	-	8	-	-	-	-	-
Comb	-	-	13	-	-	8	-	-	-	-	3
Shell bead	-	-	25	-	-	8	-	-	-	-	-

Stone axes are found in all areas, but in varying proportions. They appear to be commonest in the Portuguese dolmen groups (Huelva, Reguengos, and Alentejo) and are noticeably less common in caves. The Almerian graves show a remarkably low percentage of stone axe finds.

Flat idols, which are made either of stone or bone (Fig.1, No.1 and 13), seem to have a mainly southern distribution and are found from the Levante to the Alentejo. The proportion of sites with these idols is very similar in the Levante, Southern Spain, and Huelva. In Almeria the proportion falls considerably, but this is probably due to the number of graves with few finds in this area. It falls even more in Reguengos and the Alentejo groups; in these latter groups, however, decorated slate plaques show a considerable increase over the other areas, and thus may be considered to confirm Leisner's view that they are in fact the Alentejo type of flat idol.

Stone and shell bracelets are found mainly in Eastern and Southern Spain and from Cataluna to Malaga. Shell bracelets (Fig.1, No.17) are common in several Catalan caves and in graves in Almeria, and stone bracelets are correspondingly lacking. Stone bracelets are found in areas bordering these two regions and in areas where shell bracelets are unknown. An isolated find of a shell bracelet was made in a cave near Alcobaca, Portugal.

Callais beads, and especially the large olive-shaped beads (Fig.1, No.14), are extraordinarily common in the 'tumbas de fosa' of Cataluna (60% of the graves have these beads) but they are also known in Valencia, Almeria, and in one or two graves in the Portuguese dolmen group. If all the big olive-shaped callais or green stone beads can be considered as /

as broadly contemporary, it would provide a very useful horizon with which to compare the sequence of several cultural groups.

Flint blades are found in all groups but are commonest in the Alentejo, Reguengos and Huelva dolmens, though they are not so common as stone axes in these groups. In the caves of Valencia and Southern Spain, flint blades are commoner than stone axes.

The simple trapeze (Fig.2, No.1 and 2) is known in nearly all the areas, but is commonest in the Valencian caves (25%) and the Huelva dolmens (23%). (The Almerian settlements are not included because the number of them is too small.) They are also common in the Catalan fosa graves (17%).

The asymmetrical trapeze (Fig.2, No.3 and 4), however, is commonest in the Portuguese dolmen group. (Huelva 62%, Reguengos 42%), where it is much commoner than the simple trapeze. In the Catalan fosa graves, the simple trapeze is much commoner than the asymmetrical trapeze. It is interesting to notice that the ratio of sites with simple trapezes to sites with asymmetrical trapezes (11% to 44%) is very similar to the proportions in the Reguengos dolmen group (12% to 42%).

Different varieties of bifacially-worked arrowheads are found in all regions, but it will be readily appreciated from the table that the tanged arrowheads (Fig.2, No.5) are essentially eastern in distribution and the hollow-base western (Fig.2, No.13-22), while the leaf-shaped types (Fig.2, No.10-12) occur in both areas. The highest percentage of sites with bifacially-worked arrowheads are those from the Valencian and the Huelva-Reguengos groups, together with the sites of Central Portugal.

Bone points /

Bone points are most common in the caves of Cataluna, Valencia, and Portugal and are also known from the fosa graves of Cataluna, and from the Almeria culture, but are curiously uncommon in the Portuguese dolmen group.

Grooved pendants are peculiar to the Valencian caves, where they are fairly common (Fig.1, No.4-5).

Bone spoons are found only in the caves of Valencia and South Spain. Combs, too, are limited to these two areas and to Portugal. Shell beads are also common to the caves of South Spain and Valencia (Fig.1, No.7).

Summary

It will be readily appreciated that features such as stone axes, flint blades, and plain pottery are common in all regions, but in varying proportions. Simple and asymmetrical trapezes are also a widespread type. Regional differences may be appreciated in the arrowheads, with tanged arrowheads common in the east and hollow-based common in the west of the Peninsula. Certain features such as impressed ware appear mainly in the caves, while the two-handled pots appear in fosa graves.

Another feature which can be readily appreciated from this table is the fact that the greatest variety of objects has been found in the Levante caves. This can have two implications: either the caves were situated on an important route-way along which new cultures passed, or they were in use for a long period of time and so represent various periods. That both of these factors in fact played a part will be shown below.

It is also obvious that to attempt to distinguish the cultures merely by features such as impressed or plain pottery or use of trapezes is not sufficiently accurate. It is necessary to study each region separately.

The /

The neolithic sites of the Peninsula will be studied in the following groups: impressed ware cultures; fosa grave culture; Almeria culture; cave cultures of Murcia and Alicante; Portuguese dolmen culture.

C. IMPRESSED WARE CULTURES

The antiquity of impressed ware in the Mediterranean has never been disputed. Until recently, however, it was considered as arriving in the west Mediterranean via North Africa. In 1953 Brea was able to show that impressed ware had a mainly coastal distribution. He also showed that it is found usually on the northern shores of the Mediterranean and that it must be associated with the earliest of all neolithic cultures in the area. He infers from this that impressed ware spread along the northern shores of the Mediterranean at an early phase of the neolithic period. His opinions are now generally accepted.

Evans (1958, p.53-55) regards impressed ware as a component of his first group of cultural tradition - which he considers to be characterized generally by the use of pottery with simple shapes, with rounded bases, with string hole lugs instead of true handles, and either plain or decorated with impressions made before firing; according to him the people who made and used this pottery tended to practise some form of collective burial.

In Spain and Portugal, impressed ware is found almost exclusively in caves, and for this reason was assigned to the period of what were called "cave cultures" (by Bosch Gimpera), but these caves, for the most part, were in use during successive cultural phases and their excavators were /

were usually of the opinion that the deposits were "revueltos" or "remexidos". For this reason it is impossible to know with certainty what other features accompanied impressed ware, and in order to obtain an idea of its typical cultural assemblage it is necessary to compare finds from many sites in the Peninsula and also in the Mediterranean. The term "cultura de las cuevas" was first introduced by Bosch Gimpera to identify one of his main neolithic groups; today, however, it is generally recognized that the term covers a veritable hotch-potch of cultures of different dates. For this reason the term will not be used here and instead the term "impressed ware cultures" is substituted, because this term is generally accepted as applying to the earliest neolithic cultures of the Mediterranean shores, characterized by pottery decorated by impressions made before firing.

Impressed ware cultures can be divided into two main groups:- those characterized by pottery decorated by a cardial shell; and those with pottery decorated by other types of impression. Exactly how these two are related, or whether they do in fact represent separate cultures, is impossible to judge from the evidence available at the moment.

A glance at the map III shows that, in the Peninsula, impressed wares are to be found in four main regions - Cataluna, Valencia, South Spain, and Central Portugal. The last named seems to show the greatest diversity of finds, a fact which cannot altogether be attributed to greater archaeological activity in that area, as the caves in Valencia and Cataluna have also been thoroughly examined.

It will be necessary to study briefly the pottery and possible associated finds from these four main regions and from one or two other sites of interest.

a. Cardial ware sites /

a. Cardial ware sites

1. Cataluna

The most important site stratigraphically from this area is the small cave at El Pany (near Panades, Tarragona) which was excavated in the 1920s. Martin Grive records three levels (Martin Grive, 1927-1931, p.19ff): the lowest level contained cardial ware; the middle level beaker ware; and the uppermost level Argaric pottery. San Valero states that undecorated ware was also found in the lowest level (San Valero, 1942, p.98), which Castillo refers to as "ceramica lisa almeriense". Accompanying the beaker ware was pottery decorated with cordons and by incisions. The finds from both lower levels were as follows :-

Stone: stone axes.

Flint: flint blades; one flint saw.

Bone: thirteen bone points and a spatula.

Other finds: perforated teeth and an olive stone -- "o algo analogo" (San Valero, 1942, p.98). If this really is an olive stone, it provides valuable evidence for the early presence of this tree in the Western Mediterranean.

Pottery: Castillo refers to a spherical vase with a high neck decorated by lines and sones of parallel lines "con motivo de espiga". This may refer to an amphora-shaped vase, similar to the one from Cova Freda, Montserrat (Colominas, 1925). Ferrer and Giro, who cast doubts on the stratographical succession, published /

published a further vase with cardial decoration from this site (Ferrer and Giro, 1943, pl.I). It is deep and cup-shaped with a very slightly rounded base and a large handle: the nearest parallel to this is to be found in Cova de l'Or in Alicante (see below, p.21). San Valero classified the decorative motifs used on the pottery at this site as (1) all-over decoration, (2) horizontal or vertical bands or both, and (3) curved and zigzag patterns.

The best known sites where cardial ware has been found in Spain are the various caves at Montserrat (near Tarrasa) (Colominas Roca, 1925). Six caves are known at Montserrat and at least six contain pottery, but only two appear to have cardial ware. The neolithic finds from Cova Freda were overlain by Iberic remains. The neolithic pottery seems to have been accompanied by the following:-

Stone: an alabaster armulette; stone axes; chisels.

Flint: flint knives.

Bone: bone points and spatulae.

Pottery: plain and cordon-decorated pottery. The cardial ware was present in two main forms: one consisted of an amphora-shaped vase with two vertically perforated lugs, and with the decoration confined to horizontal lines on the neck and bands on the upper part of the body (Fig.1, No.19), the other main form consisted of a deep hemispherical bowl, with or without lugs, and with decoration in vertical and/or horizontal bands (Fig.1, No.20). (One pot was a bowl with an inturned rim and two horizontally perforated lug handles on the shoulder.) The plain /

plain pottery included bag-shaped pots with lug handles below the rim, but also hemispherical bowls with small handles, sometimes placed very low down and in this respect reminiscent of the pots from the fosa graves in Cataluna. Other forms included gently carinated bowls, sometimes with a high handle (cf. Polada types) and other vases with small flaring rims (similar to type 8 at Argar). The cordon-decorated pottery had flat bases and in some cases was reminiscent of the large storage jars of Argaric times. It would seem unlikely that all this pottery is to be regarded as contemporary and in this case it is impossible to assign the stone, bone and flint tools to any particular phase.

The Cova Gran at Montserrat yielded a similar mixture of material and Colominas remarks that it has obviously been in use during many different periods. The cardial ware included forms similar to those found at Cova Freda, and the decorative motifs are also arranged mainly in vertical and horizontal bands.

The cave No. III at the Sierra de Quimeres (Pradell, Tarragona) (Vilaseca, 1945-6) was apparently excavated some years ago and the finds were mostly destroyed during the Civil War; Vila Seca was able to reconstruct the evidence from the notebooks of the excavator. The finds include the following:-

Stone: three axes; four callais beads, three of which were barrel-shaped as in the fosa graves (in fact fosa graves are known from the opposite side of the valley).

Flint: three blades and fragments.

Bone: four bone points, two spatulae and fragments of more; a "pezuna de caballo" and some human remains.

Pottery: /

Pottery: The pot with cardial decoration is an exaggerated form of the amphora shape with a spherical body and a very narrow, high neck; there are two vertically pierced lugs on the body and the cardial decoration is confined to the neck and upper part of the body. Another vase of somewhat similar shape, but with a tendency towards a pointed base has two strap handles on two sides and two lugs with two vertical perforations on the other two sides; decoration is by means of cordons radiating from the neck to the handles or lugs. Another vase is a deep hemispherical bowl with two big horizontally-perforated lug handles and decorated by a series of horizontal grooves on the upper part of the vase. There are also two plain pots. Apparently in the middle of the grave there were stone slabs set in the form of a grave, the contents of which are not now known; it may be tentatively suggested that the callais beads and some of the bone points, stone axes and flint blades may belong to this structure and represent another fosa grave such as is found nearby at L'avenc del Rebasso.

The cave of Can Montmany (Palleja) was discovered and excavated several years ago but more recently Colominas visited it and found sherds of neolithic and hallstatt date (Colominas Roca, 1947-8, p.237-242). Two of the sherds were of cardial ware (op. cit. pl.III, 1), one with a lug or handle. It is difficult to know which forms are present, but sherd No.1 looks like a deep bowl and No.5 looks as though it may be the neck of an amphora. From the same site come finds of very fine, hard, burnished plain ware (Pl.II, 1) which Colominas refers to as "Almerian" pottery (op. cit. p.239). The forms certainly include carinated bowls. It has been possible to reconstruct one hemispherical bowl with a handle (op. /

(op. cit. Pl.III, 2) which is not unlike the bowl from La Sarsa except that the handle is much smaller. Other sherds of plain ware include several fragments with handles and one sherd with a long tubular lug (op. cit. Pl.II, 2).

Sherds of cardial ware are also known from the Cueva Bonica (Valliriana). Other finds include the following:-

Stone: stone axe and adze.

Bone: bone points and a fragment of shell bracelet.

Pottery: carinated bowls and deep bag-shaped pots have also been found (Mus. Arch. Barcelona).

A very fine cardial decorated pot was found in Cueva de Can Pascual, Castellvi de la Marca (Barcelona); it has an almost spherical body and a cylindrical neck, and there are two strap handles on the body (Fig.1, No.22, Castillo 1947, Fig.414, and San Valero 1942, p.105).

Almagro (1958, map No.22 cardial ware map) includes the cave of Toralla in his list of sites containing cardial ware and one can only assume that Almagro is referring to the only decorated "neolithic type" sherd in the whole cave (Maluquer 1949, Fig.3a) which Maluquer considers to be bell beaker. In 1944, Maluquer compared this sherd with another with very similar decoration from the cave of Les Llenes (Erina) which is situated in the neighbourhood of Toralla; this sherd had the remains of a strap handle, which Maluquer considers an argument in favour of a later date (1944, p.57), but it could also be compared with the amphora from Can Pascual or Quimeres and so be dated to the neolithic. A further site listed by Almagro (1958, No.11, map No.) is the Cueva Josefina (Escornalbou), but again no reference is made to cardial ware by the excavator (Serra Vilero 1926) nor is any recognisable in the illustrations; Almagro /

Almagro lists several more sites (mostly unpublished) at which cardial is supposed to have been found, but in view of the apparent inaccuracy of attributing cardial ware to Toralla and Josefina, this list cannot be accepted without further evidence. In 1942 San Valero published a list of sites with cardial ware known to him and if both Almagro and San Valero refer to any given site, one must assume that there is in fact cardial ware known from that site. This would permit Cova de Sant Llorenc (Sitges), Cueva de Cartanya (Tarragona), Cueva de L'Aumediella (Benifallet, Tarragona), Balma da Llera (Lladurs, Lerida), Espluga Negra (Castellfort, Lerida) (Colominas 1925, p.105) to be included in the catalogue of cardial ware finds, though according to San Valero (1942, p.106) the decoration by a cardium shell at Sant Llorenc is uncertain. The find from Cartanya (Tarragona) was further accompanied by stone implements, bone points and spatulae, and plain pottery, which included hemispherical bowls, "ovoides con gollete", and bell beaker shapes.

2. Valencia

La Sarsa, a very well known site in the Spanish neolithic is situated near Bocairente in Valencia. The site was originally excavated by Ballester but the fullest publication of the finds and more particularly of the pottery was made by San Valero (1950). The associated finds included the following:-

Stone: four axes, one complete slate bracelet and sixteen fragments of others.

Flint: flakes and small blades, eight simple arrowheads and one tanged arrowhead.

Bone: over 93 bone points, two bone spoons and spatulae, and bone rings.

Pottery: /

Pottery: There are 167 sherds or pots from La Sarsa of which the vast majority bear cardial decoration (San Valero 1950, p.77-87). Vase forms seem to include the small amphora-form of the type found at Montserrat (San Valero 1950, Pl.XVII, 2; XVI; XVII) and the large amphora of Can Pascual type is represented by one vessel, the surface of which is burnished and the decoration is by pointille ornament filled with white paste (op. cit. VII, 1). The deep bag-shaped bowl of Montserrat type is also represented at La Sarsa (op. cit. Pl.XVIII, 2). Handles are very frequent and more elaborate than at Montserrat (op. cit. Pl.VIII-X) and include the spouts (op. cit. Pl.VIII, No.1) which are more common in the Andalucian caves; some handles are not rounded but come up to an angular point (op. cit. Pl.IX, No.2, Pl.X, No.5 or Pl. VIII, No.4).

Decoration is very varied and very frequently arranged in horizontal and/or vertical bands (op. cit. Pl.XVIII, or XVII, 1). In some cases all-over decoration seems to have been used (op. cit. Pl.XI, No.11, Pl.VI, No.8); decorative bands are rarely curved, but there is one example of the use of six concentric circles (op. cit. Pl.XI, No.5).

A pair of twin vases, plain except for a zone of cardial decoration on the neck (op. cit. Pl.XIV, No.1), are quite unique in Spanish impressed ware contexts. Twin vases are known only from the Los Millares phase (Almizaraque) and from the local cultures of the Valencian Bronze age (see p.401). Similarly, a simple undecorated bowl with an enormous curved handle has no immediate parallels in Spain at this time. Special mention must also be made of sherds decorated by bands of horizontal ornament only, the decorated bands alternating with undecorated zones of similar width (op. cit. Pl.XII, 3,4,6) because this is a feature considered characteristic of /

of the maritime bell beaker. It is unfortunate that the dating evidence is so scanty, so that it is impossible to know if one is dealing with a possible beaker prototype or a late survival of cardial wares into beaker times.

In this respect the find from Cueva de la Recambra (Gandia) is perhaps of great importance. Two sherds found close together in the middle level of a 1.00m. deep deposit were published as bell beaker (Gurrea Crespo 1954, p.34-5) but from the photograph it would appear that one sherd is almost certainly cardial ware. The other sherd is decorated by pointille decoration with parallel horizontal zones and pendant hatched triangles.

Another rich cave in this region is the Cova de l'Or (Beniarres, Valencia) which is being excavated by the museum in Valencia. Finds have not yet been published in detail, but include the following:-

Stone: a few stone axes.

Flint: flint trapezes (symmetrical and asymmetrical), barbed and tanged arrowheads and star-shaped arrowheads (classified as leaf-shaped).

Bone: bone points and bone spoons, and small beads made from Pecten(?) shells (Hoya de la Mina type) are found in most levels (Fig.1, No.7).

Pottery: cardial pottery, which seems to be found at various depths. Forms include the amphora type - small as in Montserrat, but in shape more related to the Can Pascual type. The hemispherical bowl is also known. Most curious, however, is a flat bottomed cup, decorated by bands of cardial impression! The shape is not dissimilar to the ones from del Pany and Toralla, though the example from the Cova de l'Or is much finer; the handle relates by reason of its pointed peak to those from La Sarsa. A spout was /

was also found in one of the upper levels. Much of the pottery is reputed to be covered by a red slip (red burnished?) (information supplied by Fletcher and Topp).

The finds from Cueva del Mongo, Javea (Alicante) are in Alicante museum. According to Belda there are three levels: neolithic, eneolithic and Argaric (San Valero 1942, p.). It is, however, difficult to say to which of these levels the various finds would belong. With the exception of the metal there is nothing that could be considered truly Argaric. The finds are as follows:-

Stone: small axes and adzes, a marble bracelet, about $1\frac{1}{2}$ " broad and marked by about seven horizontal incised lines - similar to ones found at Hoya de la Mina.

Flint: Simple leaf-shaped arrowheads with small bilateral barbs, and one with a short broad tang. One big flint blade - several small blades and small saws which show signs of gloss.

Bone: Bone points and spatulae.

Metal: Metal blades were also found at this site.

Pottery: Cardial ware is represented by a bag-shaped pot, of Montserrat type, but there are also sherds of pottery painted in brownish red in a zigzag pattern on a cream background. Although the term "painted pottery" has been applied to certain impressed wares in Spain (Gomez Moreno 1933) the sherds from Mongo are the only examples of a painted design known associated with impressed ware. The pottery is in many cases decorated by incised lines and has long horizontally pierced lugs, or two vertically-perforated lugs placed side by side - a feature found also at Murcielagos (see p. 38). There are, as at La Sarsa, one or two sherds which /

which may be beaker sherds.

At "Barranc del Castellet" (Carricola, Valencia) there were found the following:-

Stone: Many beads, including some olive-shaped green and black beads.

Flint: Asymmetrical flint trapezes and small flint blades, fine bifacially-flaked arrowheads which are simple leaf-shaped types with lateral barbs or are roughly star-shaped.

Bone: Bone points and spatulae, a cylindrical bone object encircled by many grooves, shell beads or pendants of Hoya de la Mina type.

Metal: Awls.

Pottery: Beaker type pottery, a carinated bowl and one tiny sherd which is reputed to have cardial decoration (Pla Ballester, 1953, p.35-63).

Cardial ware was found in the upper levels of Pericot's excavations at Rates Penaes, Parpallo and Maravelles (Gandia). The sherds from Rates Penaes are very small, but the profiles would seem to indicate that bag-shaped pot was known; another fragment has part of a handle attached to it. At Parpallo various "casquetes esfericos" were found (San Valero 1942, p.102). From Belgida come reports of cardial ware finds at two surface sites (San Valero 1942, p.103-5) and cardial ware is also reported from Cueva de Bolumini and from Caseta Molina (San Valero 1942, p.103).

3. Almeria

Almeria is considered the centre of a neolithic culture typified by plain undecorated pottery; there is, however, one site in Almeria which may have cardial ware and that is the Cueva de los Toyos (Siret 1887, Pl.2), where the following finds were discovered:-

Flint: /

Flint: A few flint blades, one symmetrical trapeze, and a barbed and tanged arrowhead.

Bone: Shell beads in various stages of completion.

Pottery: A cardial amphora. Although Siret does not state specifically that the decoration is cardial (possibly he was not acquainted with this technique), and Almagro does not list it, a close examination of the drawing (Siret 1887, Pl.2) shows that the decoration is either pointille or cardial and as the form of the vessel is similar to the Can Pascual type it is legitimate to consider it in this survey. If it is in fact pointille decoration, it must represent an early example of the use of this technique. The decoration too as at Can Pascual is confined to the upper part of the body. The handles have decoration around the edge, obviously in imitation of stitching. There is also a fragment of Argaric pottery.

4. South Spain

Out of the great variety of impressed pottery types known from Hoya de la Mina (Malaga) there is only one doubtful sherd of cardial ware (Such 1920, Fig.30b) and in fact San Valero (1948, table p.18) does not refer to cardial ware from this site. In view of this, it is best to consider the finds from this site later when non-cardial impressed wares are considered.

5. Central Portugal

Westwards from Malaga there is a big gap where no cardial ware is known, until the Tagus area, where a group of sites is found.

The finest vessel of cardial ware from this area is undoubtedly the vase from Santarem in the Ethnological Museum in Lisbon (San Valero 1948, Pl.5). This vessel is similar to the Can Pascual type in size and placing of /

of the handle, but the body of the pot is ovoid and the proportions resemble the Montserratian amphorae more.

Near Santarem at Almonda (Torras Novas) there is a cave in which the deposits were said to be revolvido (do Paco, Vaultier, and Zbyszewski, 1947 and O. Veiga Ferreiva 1956). Finds include the following:-

Stone: A few stone axes.

Flint: Flint fragments.

Bone: A couple of bone points.

Pottery: Several sherds of deep bag-shaped pots with handles, decorated with cardial impression not unlike the ones from Montserrat, but deeper and having a narrower mouth, impressed pottery of similar shape, and iron age pottery.

One sherd decorated by cardium impressions is known from Casa de Moura (Cesareda), where the use of cardium is combined with incised grooves, the finds from this site are numerous and cover neolithic and early bronze age times (see p.183).

A possible sherd with cardium decoration is known from Gruta das Fontainhas (Montejunto). It is too small to give any clue regarding the form of the vessel to which it belonged. It is associated with impressed wares, stone axes, flint blades, and a bone point.

Cabeça da Ministra (Alcobaca) is a cave site near Alcobaca (Vieira Natividade 1901, p.29) with the following finds:-

Stone: Axes, adzes and chisels, slate plaques, beads.

Flint: Flint blades, asymmetrical flint trapezes, bifacially flaked arrowheads of various types and flint halberd or dagger blades.

Bone: /

Bone: Bone points and grooved headed pins.

Metal: Rings, awls, etc., were found outside the cave.

Pottery: A few sherds of impressed ware, one handled sherd with cardial decorations which probably belonged to a bag-shaped vessel.

Several sherds of cardial ware are in the Machado do Castro Museum in Coimbra; they were all found at Eira Pedrinha. In the publication of the excavation at Eira Pedrinha no reference is made to cardial ware (Mendes Correa and Teixeira, 1949) and there is in fact almost no impressed ware in the publication. It must be assumed then that the finds in the Coimbra museum come from another cave in the same area. The forms of the cardial ware seem to be bag-shaped pots, and there are apparently no associated finds.

Finally in the museum in Figuera da Foz there are occasional cardial sherds from Junqueira, Varzea do Lirio and Serra da Brenha. The first two sites are simple open settlement sites, in an area rich in dolmens and Leisner considers that the sites are contemporary with the dolmens; the sherd from Varza do Lirio seems to have a broad handle (information supplied by Frau Leisner). In a case in the Museu Etnologico in Lisbon, there are cardial sherds together with other finds from a dolmen in Beira!

6. Other sites

Almagro and San Valero both refer to cardial ware at Carmona. In this respect San Valero (1942, p.100) is following the view of Martinez Santa Olalla, that the sherds illustrated by Castillo (1928) in Pl.VI and VII (Nos.10,2,17) are in fact decorated by a cardium shell; an examination of these plates, however, suggests that the technique is fine pointille and bears no relation to cardial ware. San Valero and Almagro refer to cardial /

cardial ware from Furninha, Praganca, Assenta, and Mairos, while Almagro also includes Rotura in his list. The finds from Furninha in the Geological Museum (Lisbon) include no sherds of cardinal ware; the pottery from Furninha seems to consist only of non-cardial impressed ware. Similarly no cardinal sherds have been noted among the material on display in the museums from the other sites referred to. If there were sherds of cardinal ware from these sites, it would be of importance to know in which level they were found, in order to date the cardinal ware in relation to the sequence at these sites which otherwise appear to have no relationship to the neolithic impressed ware culture.

Summary

Cardial ware is found in three main centres in the Peninsula - Cataluna, Valencia and the Tagus area. The most characteristic forms are the deep bag-shaped bowls of Montserrat type and the amphorae of Montserrat or of Can Pascual type. The decoration tends to be confined to the upper part of the pot. Associated finds are not easy to isolate, because in many cases the caves have been in use during several periods. The caves of La Sarsa and of L'Or may be taken as typical "cardial" assemblages, because in both cases the pottery is predominantly cardinal (though see p. 75 regarding the survival of these caves until early bronze age times), and this indicates that one should associate with cardinal ware an active bone industry, especially in bone points but also in spatulae and spoons, numerous small flint blades, and occasional trapezes and stone axes. It is interesting to notice how in Portugal cardinal ware is not infrequently associated with impressed ware, while in Spain it is more commonly associated with plain ware.

b. Non-cardial ware sites /

b. Non-cardial ware sites

The finds of non-cardial impressed wares will now be considered in order to find out if any particular cultural assemblages can be assigned to them. This is necessary before any conclusions can be drawn regarding the relationship between cardial and non-cardial impressed wares. Owing to the fact that the groups are most closely associated in Portugal, it is proposed to begin the survey there and work gradually eastwards.

1. The Tagus Area

The cave of Furninha at Peniche (West of Obidos) is well known. It was excavated in the last century by Nery Delgado. The cave itself is situated in a cliff 15 m. above sea level and access to it is difficult and dangerous; in view of this it is not easy to imagine that it was used for habitation, and certainly the find of human remains, representing over 140 individuals (Nery Delgado 1884) would seem to indicate that it was in fact used as a burial cave over a considerable period of time.

Stone: Several stone axes and adzes; two stone plaques, one of which is a decorated slate plaque of a type common in the Alentejo dolmens.

Flint: Large and small flint blades (some showing slight gloss down one side), three asymmetrical trapezes, eight bifacially flaked arrowheads (two hollow base, four with crude-V-base, one with bilateral barbs and one with a rudimentary tang), two "dagger" blades.

Bone: Nine bone points and also remains of a bone comb, a flat bone plaque with incised decoration, a grooved and a plain headed pin, bone handles, and perforated teeth.

Pottery: Two pottery vessels are preserved. One is a very deep bag-shaped bowl with two vertically-pierced long lug handles, on either side of the /

the rim, and simple lugs on the other two sides; decoration consists of bands filled with obliquely drawn stab marks on the upper part of the pot. The other pot is an amphora of the Montserrat type, but smaller; decoration is again confined to the upper part of the vessel and is similar to that on the bowl, with the addition of a zigzag ornament. There are 52 sherds of impressed ware, of these eleven have small handles or pierced lugs (both vertical and horizontal) and the handles are usually simple (though the top of one comes up to a point which projects above the rim). Forms seem to be mainly bowls, and decorative motifs are similar to those of the two complete pots but also include some simple zigzags, and pendant triangles, filled with cross hatching. The decoration is frequently arranged in horizontal zones filled with oblique lines, a motif which has already been noted at La Sarsa and which is of course typical of the maritime Bell Beakers; at Furninha, however, this is carried out in impressed ware techniques on impressed ware forms, so there is no suggestion of actual beaker ware here, but rather of possible prototype or imitations of beaker imitation.

Two plain ware hemispherical bowls and three flat-bottomed shallow bowls and sherds of small biconical or carinated bowls are also known. There is a very fine sherd which seems to come from an open bowl. It is highly burnished on the inside, coarser on the outside.

Two caves in the neighbourhood of Alcobaca (Cabeca da Ministra and Calatras Alta), have produced impressed pottery which compares closely with that from Furninha in form (bag-shaped pot) and decorative motifs; but in both cases associated finds are mixed and include:-

Stone: Axes, decorated slate plaques.

Flint: /

Flint: Flint blades, bifacially worked arrowheads.

Bone: Bone points and groove-headed pins.

Four caves in the Obidos region (Columbeira, Carvalhal, Cova and Casa da Moura) yielded sparse finds of impressed ware.

At Columbeira (Santos Rocha, 1907) there were found the following:-

Stone: Two stone axes.

Flint: A hollow base arrowhead.

Pottery: Santos Rocha found two sherds of pottery decorated by "tracos gravados na pasta" (Santos Rocha, 1907). One of these sherds is from a bag-shaped pot, but the decoration consists of a narrow zone below the rim and the rim itself is also slashed; the other sherd has a distinct inturned rim, so that neither can be regarded as typical. Other finds include plain ware; one sherd is from a bag-shaped pot and has a lug below the rim; the other sherds are mostly finer, harder and belong to bowls or carinated vessels.

A few sherds of impressed ware bowls (bag-shaped pots?) were found in Gruta de Carvalhal (Turquel) (see p.185). One sherd was decorated by pendant semicircles, executed in shallow irregular grooves, and another had a similar motif but carried out by means of rows of stabbed dots; the rim of this last sherd was also slashed. Another bowl had a sort of cross-hatched design not unlike the beaker from Montes Claros, and a further sherd had a design with vertical grooves, which began and terminated in a stabbed dot - this can be paralleled in Casa da Moura.

Sherds from Cova da Moura (Cesareda) now in Ethnol. Museum include one bowl sherd with a design of vertical hatched bands exactly like that at Furninha. Other designs include rows of stabbed dots (with a slashed rim to the sherd) in straight lines or zigzag formation. There is also a sherd /

sherd decorated by grooves terminating in a stabbed dot - as at Carvalhal. There is a complete shouldered pot with an upstanding lug on the shoulder; a few stone axes and bone points were also found.

The finds from Casa da Moura (Cesareda) are extremely rich and varied (see p.183). There are some sherds of impressed ware, but only one impressed ware sherd resembles the Furninha material; it has a handle and a hatched triangle design. Decoration on other sherds consists of stabbed dots, stab and drag grooves, pendant semicircular grooves, and slashed rims, motifs which are never found at Furninha but are known from other caves in the Cesareda region.

The cave of "Nascente do Rio Almonda" has already been mentioned with regard to the cardial ware found there (see p. 25). The impressed ware sherds found there seem to come from bag-shaped bowls and in some the decoration is very similar to that employed at Furninha; they have handles and lugs (often double lugs, placed one above the other, the upper one being the bigger). Some sherds are decorated by rows of closely-spaced small stabbed dots; one sherd uses this technique for a series of bands which make a sharp right angled bend and continue down the pot. This decorative motif can best be paralleled in pottery from Hoya de la Mina. In another example this dotted design is employed to form a parallel chevron pattern, but the shape of this sherd indicates that it is no longer related to the impressed wares of Furninha, but to later shallow bowls with slightly curved base. There is a sherd from a bag-shaped pot which has a double 'ladder' pattern arranged horizontally below the rim; a similar sherd at Bugalheira has a slashed rim. The plain pottery too has simple forms and frequent lugs, and there is one example of undecorated pottery with slashed rims /

rims; two sherds of the plain pottery are shouldered. Owing to the fact that the whole deposit was "revolvido" it is not possible to know how far the finds from this site can be associated, certainly with the exception of the late wheel-made pottery, the finds are more homogeneous than in other cave sites in Portugal. (Do Paço Vaultier, Zbyszewski 1947).

The cave of Bugalheira, Almonda, yielded the following: (Do Paço Vaultier, Zbyszewski, 1941)

Stone: stone axes, and part of a bracer or whetstone.

Flint: flint trapezes, hollow base arrowheads, "bifacially flaked flint daggers".

Bone: a phalange idol decorated by the eye motif and wavy lines, a grooved pin head, bone points, a comb fragment.

Pottery: a few sherds which can be compared to the pottery from Furninha. Another series is decorated by horizontal groups below the rim and pendant semicircles, the lower edge of the pattern being outlined by a row of dots. This motif can be very closely paralleled at Vila Nova de Sao Pedro in a sherd from the lowest level (do Paço 1958). Some decorated and most plain pottery sherds are carinated and thus cannot be related to the early sequence. (The decorated sherd in this group has panels of small triangular incisions on the upper part of the vessel).

Four caves in the Montejunto region (Carrascas, Amoreira, Fontainhas, Cova da Mora) were found to contain sherds of impressed ware; although the forms are of deep bag-shaped vessels and lugs and handles, the decorative motifs are not exactly the same as at Furninha.

At Carrascas cave the decorative motif employed is of bands of stabs; this pottery is associated with flint trapezes, and one hollow base (almost mitre type) arrowhead; a shell bracelet, a plain pottery sherd which seems to have an almost flat base.

At Fontainhas the decorative motif used was of incised lines in a chevron pattern.

Stone: axes.

Flint: blades.

Bone: point.

Other pottery: a sherd of pottery with cross hatched ornament.

At Cova da Moura (Torres Vedras; see p. 182) one sherd is decorated by parallel zigzags, with three bands of oblique lines close together and bands of tiny cordons; another sherd is decorated by stab marks; and a broad strap handle is decorated by bands of oblique lines.

At Amoreira the decoration on the impressed ware pot, consists of a ladder pattern, similar to that used in Almonda. Decoration by stab and drag lines is also employed.

Stone: stone axes.

Flint: flint blades.

Bone: bone box.

A recently discovered cave, "Lapa do Fumo" near Sesimbra, was found to contain, beside bell beaker and other wares, sherds of a bag-shaped pot decorated by impressions on the upper part of the body and having four lugs which project over the edge of the rim (E. da Cunha Serrao, 1958, p.182 fig. 4).

Sherds of impressed ware were found at Olellas, a settlement site, (see p. 156) some resemble Furninha and another sherd has zones of ornament filled by dots (Cunha Serrao and Prescott Vicente, 1958).

Summary/

Summary

There is an unfortunate lack of good stratigraphical information from sites in the Tagus area containing impressed ware. Thus any conclusions regarding the development and dating of this pottery must be inferred on typological grounds.

It is noticeable that the amphora form is rare. The amphora from Furninha has the decorative area on the upper part of the vessel, a feature already noticed in cardial ware amphorae. The bag-shaped pot is well represented, and frequently has handles or lugs. The decoration is usually in horizontal and/or vertical bands, again restricted to the upper part of the pot. The best examples of this type of pottery are probably from Furninha, Almonda, and Ministra. In other areas such as Cesareda or Montejunto there appears to be more variety of decorative motifs and techniques employed, the design becomes looser, and the rims are often slashed. Whether this should be interpreted as a regional or a chronological difference is not easy to ascertain, but the fact that the Almonda pottery was found with cardial ware, and that the amphora form, characteristic of cardial ware, is also found at Furninha, suggests that the Furninha group may be earlier than the other groups; this is also suggested by the fact that this decoration on the Cesareda group of pottery is looser and less well arranged.

Although flint trapezes, bone points, stone axes, etc., occur in most caves with impressed pottery, it cannot be proved that they belong to the neolithic horizon and not to later ones. The bone industry appears to be less important than it was in the cardial ware groups, but stone axes on the other hand are more common.

In some/

In some caves, there were suggestions of connections with at least the first phase at Vila Nova de Sao Pedro. This was shown by the hollow base arrowheads, flint daggers, bone boxes, etc., (see p.187ff) which have been found, but it is not known if these were actually associated with the impressed ware.

2. South Spain

Cueva de la Mora (Jabugo, Huelva) is the only site with impressed ware in S.W. Spain. (See p.211). A few sherds of impressed ware were found among the many sherds and vessels of plain pottery (Diaz 1923). The forms are again deep bag-shaped vessels with handles and lugs. The decorative motifs consist of incised herringbone, or grooves and dots; one sherd has slashed rim decoration.

Hoya de la Mina (Malaga) is the only cave in Southern Spain which has been at all fully published. The neolithic level seems to overlie a level containing mesolithic microliths and flints. (Such 1920).

The finds include the following:

Stone: one axe and two adzes; 38 stone bracelets, some of them decorated by horizontal incisions (fig. 1. nr. 8).

Flint: scarce.

Shell: oval-shaped beads are common and beads made from pecten shells (Fig.1, 7).

Pottery: there were abundant remains of decorated pottery. Forms seem to be basically the Montserratian amphora form (Such, 1920, fig. 29 or fig. 33) but a type more related to the Can Pascual type also occurs and has double handles one above the other on two sides of the pot; both handles are formed by the same wide strap of clay and decoration in this case/

this case is confined to slashed cordons, which may be intended to imitate the effect of strings being passed through the handles and round the neck. Bowls and deep bag-shaped pottery with lugs and handles were also found (Such 1920, fig. 32, 34), sometimes cordon-decorated with slashes, again presumably imitative of string, (e.g. Such 1920, fig. 8) or with bands filled with oblique lines as at Furninha (Such 1920, fig. 32, 34). Some bowls have tiny upstanding projections on the rims (e.g. Such 1920, fig. 8, 21). Spouts are also known in the Hoya de la Mina, on an undecorated deep bowl-shaped vessel with a slight constriction below the rim. (Such 1920, fig. 3).

A sherd of pottery with decoration by grooves and stabs is not unlike the impressed ware sherd from Toralla in Lerida (Maluquer 1949, fig ea).

There is a unity in the pottery shapes and forms from this cave which suggests that only one level is represented. It is unfortunate that the associated finds are so scarce.

The pottery from the caves of La Pileta, Torremolinos and Vitoria seems to be similar to the amphorae and bag-shaped pots found at Hoya de la Mina. In the cave of La Pileta (Vitoria cave according to San Valero 1948) a flat clay female idol was found with the eyes, breasts and the pubic triangle marked. There is also a sherd decorated with grooved lines forming a series of concentric semicircles bordered by dots (or stabs).

Three important sites in Granada are Cueva do los Murcielagos, where a gold diadem was found, Cueva de la Mujer, and a cave, recently excavated and not yet published, at Pinar. The finds from the first two caves/

two caves are displayed together in the National Museum of Archaeology in Madrid with no indication as to which of the two caves they belong to. Fortunately Gongora's publication (1868, p. 25-36) is fairly lavishly illustrated, and by comparing the finds and the drawings it is possible to assign some of the sherds to the Murcielagos cave.

MacPherson's report of Cueva de la Mujer, 1871, is quite unobtainable.

The cave of Murcielagos situated near Albunol, not far from the Mediterranean coast, was first exploited for its guano (from bats); it was later used for keeping cattle in and finally exploited for some lead mineral. In 1857 a skeleton crowned by a gold diadem and accompanied by two other skeletons was discovered by the miners. The skeleton with the diadem was dressed in a short tunic made from fine esparto grass. Other skeletons were found in various parts of the cave, with sandals, tunics, caps and bags made from esparto grass and accompanied by slate knives, stone axes, flint knives and points (apparently stuck to wooden hafts), clay pots, a big piece of rough skin, bone points and wooden spoons. The most astonishing find was that of 12 skeletons, laid in a semicircle round the skeleton of a woman, who was clad in a dress of skins (which opened on the left side and was tied by means of lacing). A chain necklace of esparto grass from the links of which hung sea shells and from the central link a boar's tusk was found around her neck. (Pl. 1. and Chicarro de Dios 1945, pl. opp. p. 145). All the finds were thrown away by the miners but Gongora's son saved the pottery, etc., which is on show in the Museum today. Gongora refers to finds of a wooden spoon, a flint blade and a bone point, from this site. The museum label also includes a wooden comb, /

wooden comb, fossilized plants (similar to one from Quesada, see p.389), stone axes, beads, pendants, etc.; but all these may come from La Mujer.

Gongora illustrates various sherds of impressed ware, but only one of these seems to belong to the deep bag-shaped pottery type - it has a handle and a zone of decoration which, from the drawing, is difficult to distinguish. Otherwise the more complete vases appear to have flat bases; one base in fact has a ridge around the edge which is perforated at frequent intervals. Flat bases are generally considered a late feature (though this is purely relative and depends on the evenness of the floor on which the pot is expected to stand) but the forms cannot be compared to any known flat based pottery of later date. Spouts are a common feature at Murcielagos and probably occur on flat based pottery. Long tubular perforated lugs, double handles similar to ones from Torremolinas and Bovila Padro, and an ear shaped lug with two perforations within it, are also found at Murcielagos. The decoration on the pottery does not conform to the Furninha/Hoya de la Mina type, but so little is illustrated that no further conclusions can be drawn. It is unlikely that the gold diadem can be attributed to a neolithic age, and as the diadem was found near the entrance of the cave it could be considered to belong to a secondary deposit. The skeletons in this group, however, are also reputed to have had esparto grass tunics and accessories, which relates them to the main group of burials in the cave. Thus if the finds from the cave are to be accepted as neolithic in date, one must either doubt the authenticity of the esparto grass objects, or admit that this gold diadem is one of the earliest known examples of gold in the Peninsula. There is no other evidence to suggest that the use of gold is earlier than /

than Beaker times and the main period of use seems to come in Beaker Reflux times (see p.) and diadems especially are not known earlier than this period (e.g. Montilla, etc.). It is, however, difficult to believe that this cave continued in use until late Beaker times; because the finds are so primitive in type. It is possible that the burial with the gold diadem was not dressed in an esparto grass tunic, and is in fact secondary.

Gongora (1868, p.77) reports the chance discovery, by hunters chasing a rabbit, of another cave, between Albánchez and Torres, where various skeletons were seated in a semicircle and armed with arrowheads, knives and spearheads; unfortunately everything was destroyed but it is known that pottery and wooden spoons were found.

Finds from Cueva de la Mujer (Alhama de Granada) would, according to the Museum label, include spouts, double handles, stone axes, a flint blade, etc., similar in fact to the finds from Murcielagos. A stone bracelet fragment (with horizontal incisions (as at Hoya de la Mina), flint knives, barbed and tanged, and leaf-shaped arrowheads are found in Granada museum. One pottery vessel is interesting (Madrid museum). It stands about 30 inches high, is oval in shape with an everted rim; decoration is by means of cordons which are scattered over the surface of the pot to form circles, -V-'s, loops, etc.; the shape is remarkably similar to the Argar amphorae! No parallel is known. Sherds in the museum at Granada include strap handles and decoration by the ladder pattern criss cross, panels filled with stabs (as at Olellas) and slashed or finger tip decorated cordons.

The /

The cave of Campana at Pinar, excavated by Spagni is not yet published. The finds are in Granada museum. The pottery types seem to include the amphorae form; lugs and handles are known and decoration consists of parallel incised lines arranged in zigzag, oblique or right-angled formation. A sherd with slashed cordons also has a scalloped rim and another sherd has a pinched up surface.

Gomez Morena published a bag-shaped pot with handles from Cacin Alhama de Granada (Gomez Moreno 1933, p.133, Fig.9). It is decorated on the upper part of the body by pointille ornament in the shape of hatched pendant triangles and a broad band filled with pointille lines. This vessel is covered with a red slip. (In the Archaeological Museum in Madrid this pot is said to come from Caniles.)

A group of pottery typified by a bright red burnish^{and}/decorated by a series of parallel incised lines, frequently filled with white forming angular patterns (Fig.1, No.21), is known from several sites in Southern Spain. The most famous of these is Cueva de los Murcielagos, Zuheros (unpublished, excavated by the Comisaria General de Excavaciones). The only information available about this excavation was supplied by the director of Cordoba Museum, Santos Jener, who said that a stone bracelet was found on the arm of a female skeleton.

Vessels of this type are also found at Cueva Tapada de Torremolinos (Gimenez Reyna 1946) and Atarfe Granada (Gomez Moreno 1933). Santa Olalla refers to this pottery as 'Ceramica a la Almagra'.

The large jar from Parazuelos (Siret 1887, Pl.8) may be considered here because, although it is not decorated by impressions, the arrangement of the handles and the use of cordon decoration between the handles in imitation /

imitation of cords can be closely paralleled at Hoya de la Mina. The base with the five-pointed star is very curious and has no exact parallels.

Summary

It is not possible to suggest what the cultural assemblage of non-cardial impressed ware was in Southern Spain because, apart from pottery, finds are remarkably scarce.

With regard to the pottery, the amphora form, though prominent at Hoya de la Mina, is not common elsewhere. Bag-shaped pottery is, however, well represented. Flat bases at Murcielagos suggest that the pottery there is late in date. A special type of pottery, usually bag-shaped, is characterised by a bright red burnish and incised decoration arranged in angular patterns and it has been found at certain sites in this area. The only find associated with this pottery is one stone bracelet. There is evidence for close connections with the Valencian caves (bracelets, spouts, beads, see p.70ff).

3. Valencia

From Mongo cave (see p.22) sherds are decorated by grooves. Pottery forms are no longer simple bag-shaped vessels but shouldered pots. Handles and lugs also occur.

From the cave of Llates (Andilla, Valencia) come sherds with decoration by fine parallel incisions, or by slashed cordons; the sherds are too small to be able to judge the type of pot form represented.

At Torre de Mal Paso cave there are sherds decorated by fine cordons and pottery decorated by grooved pendant semicircles, outlined by dots (Jorda Cerda 1958, Pl.III).

4. Cataluna /

4. Cataluna

Although several caves from Cataluna have been excavated, few at all have yielded impressed wares, such as are found at Furninha. The caves of Arbolí (Tarragona), Escornalbou, Cueva Joan d'Os, Foric, contained decorated pottery, but none which could be attributed to the neolithic period.

From Cueva de la Fou (Bor) however comes a handled cup reminiscent of the example from Cova de l'Or in Valencia, and other pottery from this cave includes ware decorated by pendant triangles filled with dots; there is also a sherd (possibly of a bag-shaped bowl with semicircular grooves converging on a perforated lug in a manner similar to the way zones of decoration converge on lugs and handles on pottery found in Southern Spain and Portugal).

5. Other areas

Finds of impressed ware from Central Spain seem to be remarkably scarce. In the National Archaeological Museum in Madrid there are sherds from the cave of Nogaleda, near Segovia. The sherds are very small but may include the bag-shaped pot; decoration seems to be by incisions or grooves, with herring bone patterns of parallel lines, etc. One sherd, however, cannot be likened to normal impressed ware, because it has a distinctly everted rim and slender body. Certainly no other sites with pottery at all comparable to the cardial or impressed ware groups of Portugal and Southern or Eastern Spain are known to the writer.

A cave in Cáceres, at Maltravieso, has produced pottery decorated by herring bone incisions, but the form does not compare with the amphorae or bag-shaped vessels. One vessel is almost bag-shaped but it has /

has a sharply everted rim. The whole pot is decorated by bands of ornament, more reminiscent of beaker than of impressed wares. Another bowl from the same site has a flat base and altogether the impression is one of lateness and certainly not of an early impressed ware group. Associated finds actually included a bracer!

Summary

The evidence for impressed ware of the type known from Hoya de la Mina or Furninha is extremely scanty in Eastern and Central Spain. There are no good parallels either in pottery forms or in ornament with the western sites. The cardial sites of Eastern Spain, however, show more relation in form, decoration and handle types with the sites in Southern Spain.

D. FOSA GRAVE CULTURE

The fosa grave culture, which is sometimes referred to as the 'Almerian culture in Cataluna', is known mainly from burials. The custom of single crouched burial in a small pit distinguishes this culture from other groups, such as the impressed ware or dolmen groups, and gave the culture its name. The grave goods too are distinctive and astonishingly uniform.

Maluquer (1950) remarks upon the fact that the fosa graves are frequently found in the low fertile areas of south Cataluna, which suggests that the economy of this group must have been based on agriculture (querns are found in the graves). The numerous examples of boars' tusks and other remains suggest that it was supplemented by hunting.

There /

There is a remarkable concentration of these graves in the Valles area (Colominas 1952, p.201), but many of them were destroyed and the finds lie unpublished in various museums.

The most famous site is probably Bovila Madurell, Sant Quirze, where several graves were found. Finds from these graves, which were not published separately, appear to be fairly typical of all fosa graves. They included the following:-

Stone: Axes with an oval section, callais or stone beads, which are frequently olive shaped, or thick and disc shaped (Serra Rafols 1947, p.57-75).

Flint: Flint knives, rarely retouched, nuclei, flint trapezes and tanged arrowheads.

Bone: Bone points (usually found around the skull).

Pottery: Deep and shallow hemispherical bowls, often with lugs or handles below the rim, large ovoid pots with handles half-way down the side of the vessel; slightly biconical pots with handles or lugs below the rim; low cylindrical vessels with a rounded base above which there are often perforated lugs; a few pots with square mouths. Bases are nearly always rounded. (Maluquer 1950)

Two rather exotic finds from this site are the shell of a tortoise from a child's grave, and a long bone axe, which has a transept edge at both ends and in the centre a perforation, presumably for hafting.

Twenty-nine fosa grave sites are known to the writer (Bovila Madurell and Bovila Padro have each been counted as one site) but there must be many more. Many of these sites were discovered by workmen or peasants in /

in the course of their work and there is no guarantee that all the finds reached the museum. An analysis of the finds from these twenty-nine graves gives the information shown in the table below.

Object	Stone axes	Olive callais bead	Flint blades	Two handled pot	Nuclei	Bone Points	Trapeze	Tanged arrow-heads	Disc callais beads
Number of graves in which object was found	19	18	16	7	7	5	5	3	3

The stone axes tend to be triangular or trapezoidal in shape and pointed butts are common. Some attain a fair length, as, for example, one from La Bispal in Ampurdan which was 29cm. long and highly polished. (It may also be made of greenstone) (Colominas 1940, No.4). Greenstone was used for axes at Bovila Padro and Bovila de en Joca, and Mantornes del Valles (Estrada y Garriga 1956, p.113).

The callais beads are usually large and olive shaped but there are also large, clumsy disc-shaped beads of the same material. The large size of the callais beads in the fosa graves is in contrast to the tiny disc-shaped callais beads of the megalithic graves.

The flint beads are usually fairly big and are not retouched. The find of flint trapezes in the fosa graves is significant and suggests an overlap, in part at least, with the impressed ware culture. The tanged arrowheads are usually rather roughly worked.

The square mouthed pots and the two handled ovoid pots are important because they indicate connections with Northern Italy (see p.84).

Summary

The fosa grave culture is restricted to certain areas of Cataluna.

It /

It is characterized by certain types of pottery, stone axes, callais beads, etc., which cannot be paralleled in the impressed ware culture. The presence of flint trapezes may indicate contemporaneity with the impressed ware groups of Valencia. The foreign relationships of this culture will be discussed later (see p.84 ff).

E. ALMERIA CULTURE

When strictly applied, the term "Almeria culture" refers to a cultural group in the provinces of Almeria and Granada. Most of the graves included in the culture were excavated by Siret, who devised a series of four phases in the development of the culture, which have been examined and generally accepted by the Leisners (1943, p.390ff.). The graves of phases I and II are similar. They are small round graves or rectangular cists, without passages. Phase I is apparently characterized by small flint beads, simple flint trapezes, shell bracelets, and a few stone axes; Phase II by the appearing of flat idols, bifacially worked arrowheads, asymmetrical flint trapezes, beads, pottery, stone axes, etc. (Leisner 1943, p.404ff); Phase II/III is a transition phase and regarded as contemporary with the beginning of Los Millares; and phase III is fully contemporary with Los Millares. The graves of phase II/III consist of the bigger round graves, some of which have a passage. Phase III is characterized by round graves and corbel-vaulted graves. Sangmeister considers Phase II/III as unnecessary and believes that sites from this phase can be attributed to either the preceding or succeeding phases, and he would place the beginning of Los Millares towards the end of the Almeria /

Almeria II Phase (Sangmeister, forthcoming b.). The small megalithic graves, which Siret included in phase I, are considered by the Leisners to represent impoverishment of a later group, rather than true neolithic graves (Leisner 1943, p.559).

The division into stages seemed to be based on the view that simple trapezes, small blades, shell bracelets, etc., must be early, and flat idols and bifacially worked arrowheads must represent later intrusions. There are, however, graves of phase II which contain shell bracelets (e.g. Palaces, Alcanzon, Llano del Planes and Almanzora 35, etc. The last named grave contains both shell bracelets and flat idols!) Shell bracelets are also found in graves with passages, which should, according to the Leisners, be later than phase II of the Almeria culture (La Gabiarra 94, Puntal de la Rambla, and Llano de Media Legoa). Simple trapezes are similarly found in phase II and II/III graves (Las Churuletas, Jocala 4, La Lampara and Llano de Media Legoa). These anomalies could be attributed to the custom of collective burial, but this would mean that the more complex graves are as early as the simple graves, in which case the grave typology is wrong, or that the finds represent two cultures, which existed side by side, in which case the division of the Almeria culture into chronological stages is wrong. Because of these difficulties it was decided to adopt a less subjective approach to a study of the Almeria culture, and a statistical method has been developed to show whether the objects available for study showed any significant associations with one another. This method shows up the true associations, even in the presence of spurious associations caused by the custom of collective burial.

The /

The graves considered were those ascribed to phases I, II and II/III of the Almeria culture (see Leisner *passim*). All were from the provinces of Almeria and Granada, and there were 151 in all. Thirteen of the objects found in these graves were selected for study; they comprised the majority of the finds. Table 1 lists the objects, the reference letter used for each in the later tables, and the number of graves in which each was found (not the number of objects). Table 2 is a list of decimal fractions, which express the occurrence of the object (e.g. something which occurs ten times is said to have an occurrence of one-tenth, or 0.1). Table 3 gives a grid of rows and columns (one for each object) forming squares (one for each association of objects taken in pairs). The number in each square is the number of graves in which the two objects concerned were found together. For example, the 9 in row B column A indicates that there were 9 graves with A and B together. Table 4 is a similar grid containing a pair of numbers in each square; these are probabilities, using that term in its strict statistical sense. For instance, flat idols were found in 14 of the 151 graves; statistically speaking the "probability" of finding a flat idol in any one grave is $14/151 = 0.093$. Similarly, the probability of finding a tanged arrowhead (found in 19 graves) is $19/151 = 0.126$. Now, in a random distribution the probability of finding two items together is the product of their individual probabilities. Thus, if they were randomly associated, the probability of finding a tanged arrowhead with a flat idol would be $0.093 \times 0.126 = 0.012$, which is rather less than 2 in 151. This random probability of occurrence together is given in Table 4 as the lower number in each square. The actual occurrence of the two objects has for convenience of comparison been /

TABLE 4

A										
.060		B								
.012										
.026		.020		C						
.004		.003								
.013		.020		-		D				
.020		.015		.005						
.073		.066		.020		.046		E		
.029		.017		.008		.036				
.020		.026		-		.026		.033		F
.014		.010		.004		.018		.026		
.066		.079		.026		.033		.073		G
.029		.020		.007		.036		.052		
-		.020		-		-		.033		H
.007		.005		.002		.008		.012		
.079		.073		.033		.060		.179		I
.040		.029		.011		.050		.073		
.066		.033		.013		.040		.033		J
.022		.016		.006		.027		.040		
.066		.053		.020		.040		.113		K
.025		.018		.006		.030		.044		
.026		.013		.007		.007		.033		L
.008		.006		.002		.009		.014		

been expressed similarly in the form of statistical probability and given in the upper number in each square in Table 4. For instance, flat idols were found with tanged arrowheads in nine graves out of the 151, which is an "occurrence" of $9/151 = 0.060$. This is clearly greater than the probability of random association (shown above to be 0.012); in other words there is what may be called an "attraction" between the two objects. If the occurrence were less than the random probability of association, it could be called a "repulsion".

Table 5 gives a similar grid, the number in each square being the ratio of the "occurrence" to the random probability. The '-' indicates there is no evidence of attraction or repulsion. The interesting cases of association which are revealed by this analysis are given in Table 6. The following degrees of association have been defined as strong, moderate or weak attractions between two given objects according to the following criteria. An "occurrence" four times the random probability or more has been considered "strong"; between three and four times has been considered moderate; between two and three times has been considered weak: while less than two times has been taken to indicate no convincing evidence of attraction. It should be remarked that the lack of evidence can be of two kinds: either there were insufficient cases for any tendency that there may have been to show; or there was in fact no tendency to attraction or repulsion (an example of which is discussed below).

An examination of the results of the analysis shows that tanged arrowheads, callais and flat idols are strongly attracted to each other. Both bifacially-worked arrowhead types, though not attracted to each other, are /



TABLE 5

A												
5.0	B											
6.5	6.67	C										
0.65	1.33	-	D									
2.52	3.9	2.5	1.3	E								
1.4	2.6	-	1.44	1.3	F							
2.3	3.9	3.71	0.9	1.4	1.3	G						
-	4.0	-	-	2.8	2.2	2.8	H					
1.975	2.52	3.0	1.2	2.45	1.1	1.3	1.5	I				
3.0	2.1	2.2	1.5	0.82	2.8	1.2	3.67	1.3	J			
2.54	2.9	3.3	1.33	2.57	1.8	1.7	4.0	1.97	2.4	K		
4.25	2.2	3.5	0.8	2.35	2.86	1.5	8.7	2.1	4.6	3.64	L	

TABLE 6

	Strength of <u>Association</u> From Table 3	Cases of <u>Association</u> From Table 1	<u>Objects with total number of objects in group</u>	
<u>V. Strong</u>	8.7	4	H 8	L 9
<u>Strong</u>	6.7	3	B 14	C 5
	6.5	4	A 19	C 5
	5.0	9	A 19	B 14
	4.6	7	J 26	L 9
	4.2	4	A 19	L 9
	4.0	6	H 8	K 29
	4.0	3	B 14	H 8
<u>Moderate</u>	3.9	10	B 14	E 35
	3.9	12	B 14	G 34
	3.71	4	C 5	G 34
	3.67	5	H 8	J 26
	3.64	6	K 29	L 9
	3.5	1	C 5	L 9
	3.3	3	C 5	K 29
	3.0	5	C 5	I 48
	3.0	10	A 19	J 26
<u>Weak</u>	2.9	8	B 14	K 29
	2.86	3	F 17	L 9
	2.8	5	G 34	H 8
	2.8	8	F 17	J 26
	2.8	5	E 35	H 8
	2.6	4	B 14	F 17
	2.56	17	E 35	K 29
	2.54	10	A 19	K 29
	2.52	11	B 14	I 48
	2.52	11	A 19	E 35
	2.5	3	C 5	E 35
	2.45	27	E 35	I 48
	2.4	12	J 26	K 29
	2.35	5	E 35	L 9
	2.3	10	A 19	G 34
	2.2	2	F 17	H 8
	2.2	2	C 5	J 26
	2.2	2	B 14	L 9
	2.1	5	B 14	J 26
	2.1	6	I 48	L 9

are strongly attracted to the amphorae, and hollow-base arrowheads are also attracted to flat idols. Flat idols are also strongly attracted to bone points and asymmetrical trapezes. Asymmetrical trapezes are found with moderate attraction to the idols and callais, and weak attraction to tanged and hollow-base arrowheads. The simple trapeze, on the other hand, are found in weak attraction to axes, amphorae, idols, and hollow-base arrowheads. That the asymmetrical trapeze has a greater attraction to foreign elements may be due to the fact that asymmetrical trapezes are indigenous imitations of bifacially-worked, hollow-base arrowheads.

The shell bracelets are most interesting because in no instance can they be shown to have a strong attraction with any other object, and that this is not due to insufficient data is shown by the fact that there are 24 bracelets and that definite results were obtained in the analysis of a smaller number of objects (e.g. bone idols of which there are 14). No definite attraction can be indicated for shell bracelets but weak repulsions are found with amphorae and asymmetrical trapezes; otherwise the bracelets are very very weakly associated with all other objects, except hollow-base arrowheads and vases, where there is no evidence of either attraction or repulsion.

The significance of this for the Almeria cultures must be that shell bracelets cannot be separated from the other cultural features and considered as representing an earlier phase of the culture, because, in fact, they show an overlap with most of the other objects.

It may be relevant to note, in this case, that with three exceptions, all shell bracelets are found in round graves, without passages.

Other /

Other features which can be considered as showing little relationship to the group with foreign objects are the simple trapeze and the flint blade, followed by the axe, the vase, and the bowl.

To summarise then, it is possible to distinguish two groups. The general lack of repulsion indicates that these groups did not form water-tight compartments and hence cannot be considered as two separate chronological stages but rather as two groups which must be considered at least partly contemporary owing to the fact that features of both are found together. The first group is characterized by the strong association of flat idols, callais beads, and bifacially-worked arrowheads; amphorae can also be included. The other group can be characterized by shell bracelets and trapezes, though, in fact, these two show little relation to each other. Asymmetrical trapezes, bone points, axes, and bowls, are probably to be considered as part of the latter group, but they show stronger links with the first group than do the bracelets and trapezes.

It is also of particular interest to note that it is features of the first group which are found at Los Millares - flat idols, bifacially-worked arrowheads, and callais, whereas shell bracelets are unknown at Los Millares, and simple and asymmetrical trapezes are uncommon. Leisner also noted a decrease in the number of smaller flint blades found at Los Millares compared with the Almeria culture.

Flat idols, bifacially-worked arrowheads, and callais cannot be considered as indigenous elements. They are not known from the earlier impressed ware sites. Flat idols do, however, have good Eastern Mediterranean parallels, and bifacial working of flint may also have a similar connection. Callais was noted in the fosa graves in Cataluna, and any /

any connection between the Almerian and the fosa graves would be important from the point of view of the relative chronology (see p.102). It is permissible to suggest then that the flat idols, bifacially-worked arrowheads, callais, and amphorae represent an intrusive foreign element in Almeria. If this is true then the trapezes, shell bracelets, flint blades, etc., must be paralleled in early cultures in other regions. The distribution among the different grave types of the intrusive elements is shown in the table below.

Table A				
Grave type	Bifacial arrowhead	Idol	Amphora	Callais
Round grave	13	7	6	3
Ro. grave with passage	2	2	-	1
Rectangular grave	-	2	-	1
Rect. gr. with passage	4	4	2	-

The Almeria culture graves and the problem of collective burial.

The majority of the graves in the Almeria culture have no passages. This can mean that single burial was practised, or if more than one burial occurs, that they were buried at one time or that there was some means of access through the roof for subsequent interments.

The table below summarises the information available with regard to the number of burials in graves of the Almeria culture. (Up to two burials has been counted as single burial.)

Table B				
Grave type	Single burial	Coll. Burial	No Info.	Total No. of graves
Round graves	13	6	40	59
Ro. gr. with passage	1	1	6	8
Rectangular grave	1	4	8	13
Rect. gr. with passage	2	9	40	51

Thus /

Thus, 13% of all Almerian graves (i.e. 20 in 151) are known to have collective burials and about 11% (17 in 151) are known to contain single burials. Of the 21 round graves for which information is available, 66% have single burial, and of the 16 rectangular graves 80% contain collective burial. The table No.A indicates that the richest and most varied grave goods are found in the round graves without passages; the table below shows the associations of different objects with collective and single burial.

Table C

	Simple Trap.	Shell br.	Blades	Axes	Asym. trap.	Flat Idol	Bi. a.h.	Callais	Amph.
Single	2	2	3	5	2	1	2	0	1
Collective	3	4	9	8	8	6	5	3	1
No info.	12	18	36	13	24	7	13	2	5

The most significant associations with collective burial as seen from the above table are flat idols, callais, bifacially worked arrowheads, and asymmetrical trapezes; all of which indicate association with the foreign elements in the Almeria culture.

An examination of the tables above shows that collective burial was more common in the rectangular graves than it was in the round graves. On the other hand, collective burials seem to be accompanied by certain objects which are found more commonly in round graves than they are in rectangular graves. A possible interpretation of this is that there is a change over in the burial custom in the round graves, from single to collective burial. The rectangular graves, which are mostly in Granada, would take over this custom as it spread slowly inland, and this would confirm the Leisners' theories, that despite the primitive grave goods (mainly /

(mainly simple and asymmetrical trapezes and axes) these graves are in fact relatively late. This would suggest that the indigenous inhabitants of the area, whoever they were, practised single burial in small round graves. A grave of particular interest at this point is Loma de la Torre 4, (Leisner 1943, p.15). It is a round grave with a diameter of 1,20m. and it contained nine burials which were accompanied by three flat stone idols. It is obvious that normal inhumation could not have been practised in such a small grave, hence it may be inferred that the custom of secondary burial was practised and that the tomb received the bones only of the deceased after the flesh had been removed. If this is in fact the case, good parallels can be shown for this custom in the Aegean area, at sites such as Hagios Kosmos (see p.245), where flat stone idols are also found, and the graves were either round or rectangular. If the grave of Torre 4, can be considered as an early type and representative of the intrusive elements arriving in Almeria from the Eastern Mediterranean, there remains a further possibility with regard to the appearance of collective burial in round graves in Almeria. The indigenous inhabitants, the neighbours of whom in Valencia and Southern Spain are known to have practised collective burial in caves, may have adopted the round graves from the intruders, but being unfamiliar with the custom of secondary burial, they would have had to enlarge the size of the grave to accommodate successive inhumation burials. This theory is not without difficulty, however, especially with regard to the development of the Tholos graves at Los Millares (see p.108ff).

Summary /

Summary

With the aid of the statistical analysis it was possible to show that the grave goods of the Almeria culture fell into two distinct groups. One of the groups was characterized by intrusive elements, the other by indigenous features. It was also possible to show that these two groups must be at least partly contemporary. There is a possibility that collective burial in round graves was introduced by the intruders.

F. CAVE CULTURES OF MURCIA AND ALICANTE

A group of cave sites from Murcia and Alicante and a couple of sites in Granada must be mentioned, because they show some features which relate them to the Almeria culture and other features which relate them to impressed ware culture.

Cerro del Greal (Iznalloz - Granada) (J. Corrañal Maurell 1957, p.6). A rock cut tomb with a circular chamber, there was a projection of rock on one side, forming a sort of niche. The chamber, which was 2,90m. in diameter, was entered by a passage; access to which was gained through a trapeze shaped opening facing south-east.

The idols are long and slender (Fig.1, No.1) and most closely paralleled in those of Alicante (see below p. 95). Associated finds were as follows (Pellicer Catalan 1957-58, p.123ff):-

Flint: Knives (medium and large in size), hollow-base arrowheads.

Bone: Bone points, and a segmented pendant.

Pottery: Two deep hemispherical bowls, a carinated vessel, and a biconical pot.

This /

This grave has a very close parallel in one recently discovered in Murcia (Gratiniano Nieto - forthcoming) and Pellicer refers to a similar type of grave at Cabra de Santo Cristo, Jaen (Pellicer 1957-58, p.) where a stone flat idol was also found (Cabre Aguilo 1924, p.91ff).

Montefrio (Granada) (Tarradel, 1952).

Stone: Stone axes.

Flint: Blades, tanged and hollow-base arrowheads, flat idol.

Bone: Bone points, comb, -v- perforated buttons.

Pottery: Decorated pottery and pottery spoons.

Blanquizaes de Lebor, Totana (Murcia), a cave site which contained remains of 92 burials (Cabre 1931, p.51ff). Finds are:-

Stone: 45 axes, adzes, or chisels, a cylindrical stone vase with zigzag bands painted in red, a "vasso de yeso" (op. cit. Fig.16).

Flint: Blades, about 100 arrowheads, principally tanged arrowheads, and a very few trapezes (op. cit. Fig.8-10).

Bone: Bone points, various bone idols, an anchor ornament, bone and stone pendants, and bone pendants incised with grooves in spiral or concentric formation (called grooved pendants), and a grooved pinhead. A wooden comb. Fragments of esparto grass fabric. (Fig.1, 2-5).

Metal: Four copper points.

Pottery: Over 80 pottery vessels (hemispherical bowls and flat bottomed vessels) (op. cit. Fig.14-15).

Monte de la Barsella, Torremanzanas (Alicante), a cave site. (Belda Dominiguez 1929, & 31).

Stone: Axes (one of green diorite).

Flint: Blades, innumerable tanged arrowheads found in the lower level

Bone: /

Bone: Idols, anchor ornaments, and spirally decorated bone pendants, bone points, and spatulae, and also shell beads of a type similar to those found in L'Or and Hoya de la Mina.

Cueva de la Pastora (Alcoy). Burial cave (Ballester Tormes 1949, p.41-76 and 1945 p.115-141).

Stone: Axes and greenstone olive-shaped beads.

Flint: Flint blades, three asymmetrical trapezes, and a variety of tanged arrowheads and one hollow-base arrowhead.

Bone: An unusual feature is the occurrence of several long bones, painted with eye motifs; spirally grooved pendants, and grooved pin heads (Fig.9, 1).

Shell: Beads of Hoya de la Mina type.

Copper: Point.

Pottery: Includes simple bowls and platters.

Barranc del Castellet. (Carricola, Valencia)

Stone: Green stone olive-shaped beads.

Flint: Asymmetrical trapeze shaped arrowheads, tanged arrowheads.

Bone: An incised spirally grooved pendant.

Shell: Pecten beads of Hoya de la Mina type.

Belda refers to further spirally ornamented pendants from the unpublished cave at Les Lalometes in Alcoy.

Summary

It is obvious, from these sites, that there is in the Murcia-Alicante area a local group practising collective burial in caves and characterized especially by the bone pendants and ornaments, the significance of which must be discussed later, but it should be noted that the /

the two features accompanying flat idols in Almeria - tanged arrowheads and green stone beads, are also found in many of the Alicante sites.

G. PORTUGUESE DOLMEN CULTURE

The origin and development of the Portuguese dolmen culture is a much disputed question.

Heleno and others believe that the dolmens originated in inland Portugal, in the Alentejo. The earliest structures were small and simple, usually containing a single burial which was accompanied by grave goods of a primitive type - axes with circular cross sections and simple trapezes. Heleno says he has excavated many dolmens of this type especially in the Montemor-o-Novo region over the past 25 years, but he has not yet published his results; the finds in the Ethnological museum are inaccessible. In view of this it is not possible to study the significance of the small dolmen.

In order to see if a more primitive series of grave goods could be detected in the Portuguese dolmens, a statistical analysis, similar to that used for the Almeria culture, was carried out. The dolmens selected belonged to the Huelva and Reguengos groups published by the Leisners (1950 and 1951) and any dolmens from the Alentejo, about which information was available (Viana 1955, Viana 1957, 1951, 1953a, 1953b, Leisner 1944, 1951, 1952, 1953, 1955, 1949, Veiga Ferreira and Rodrigues Cavaco 1955, and notes from finds in the museums of Vila Vicosa, Elvas and Ethnological Museum, Lisbon).

There were eighty graves altogether. Table 1 lists the objects, the reference letter used for each in the later tables, and the number of graves /

graves in which each was found. Table 2 lists the occurrences of each object. Table 3 gives the associations of the objects. Table 4 gives the probabilities, Table 5 the ratios, and Table 6 the sequence of association (for full details see p.48).

At the head of Table 6, it will be seen that flat idols are strongly associated with platters. Flat idols were further associated with asymmetrical trapezes, hollow-base arrowheads, simple trapezes and slate plaques. Asymmetrical trapezes and hollow-base arrowheads were found with flat idols in Almeria, but simple trapezes were not associated with flat idols there. Slate plaques are almost unknown in S.E. Spain, but Leisners believe that they are the Alentejo equivalent of the flat idol. Their strong association with flat idols would seem to confirm this. Platters are not known in the Almerian graves (Leisner 1943, Table 161, Columns A-C) but are known from sites of Los Millares I date.

Callais is associated with the asymmetrical trapeze, as was noted in Almeria.

Bifacially flaked arrowheads. In the West the place of the tanged arrowhead is taken by hollow-base ones and leaf-shaped ones are also found. The hollow-base ones are found particularly with slate plaques and flat idols; leaf-shaped arrowheads are found particularly with slate plaques. These associations are similar to that in Almeria between bifacially worked arrowheads and flat idols.

The asymmetrical trapeze is found commonly with the simple trapeze, callais, and flat idol. All these, with the exception of the first, were noted in Almeria. The simple trapeze was very rarely found with the asymmetrical arrowhead there.

The simple trapeze /

TABLE 1

Object	Ref.	Number of graves
Simple trapeze	A	6
Flint blade	D	52
Platter	E	10
Bowl	F	42
Plain ware	L	53
Flat idol	N	5
Axes	O	58
Callais	P	6
Asymmetrical trapezes	U	28
Leaf-shaped arrowhead	W	9
Hollow base arrowhead	X	29
Plate plaque	aa	34

TABLE 2

A	-	.075
D	-	.065
E	-	.125
F	-	.525
L	-	.663
N	-	.063
O	-	.725
P	-	.063
U	-	.350
W	-	.113
X	-	.363
aa	-	.425

TABLE 3

A												
5	D											
2	8	E										
6	29	9	F									
6	38	10	42	L								
1	5	3	5	5	N							
6	40	6	31	40	4	0						
-	4	-	1	2	-	-	P					
6	23	6	18	22	4	23	5	U				
-	4	-	7	8	-	7	-	5	W			
3	24	9	25	25	4	20	2	17	4	X		
2	28	7	24	26	5	22	2	15	8	25	aa	

TABLE 4

A											
.063	D										
.049											
.025	.100	E									
.009	.081										
.075	.363	.113	F								
.039	.341	.066									
.075	.475	.125	.525	L							
.050	.432	.083	.348								
.013	.063	.038	.063	.063	N						
.005	.041	.008	.033	.042							
.075	.500	.075	.388	.500	.050	O					
.056	.471	.091	.380	.481	.046						
-	.050	-	.013	.025	-	-	P				
.005	.041	.008	.033	.042	.004	.046					
.075	.288	.075	.225	.275	.050	.288	.063	U			
.026	.228	.044	.184	.232	.022	.254	.022				
-	.050	-	.088	.100	-	.088	-	.063	W		
.008	.073	.014	.059	.075	.007	.082	.007	.040			
.038	.300	.113	.313	.313	.050	.250	.025	.213	.050	X	
.027	.236	.045	.191	.241	.023	.263	.023	.127	.041		
.025	.350	.088	.300	.325	.063	.275	.025	.188	.100	.313	aa
.032	.276	.053	.223	.282	.027	.308	.027	.149	.048	.154	

TABLE 5

A										
1.3	D									
2.8	1.2	E								
2.2	1.1	1.7	F							
1.5	1.1	1.5	1.5	L						
2.6	1.5	4.5	1.9	1.5	N					
1.3	1.1	0.82	1.0	1.0	1.1	O				
-	1.2	-	0.39	0.49	-	-	P			
2.9	1.3	1.7	1.2	1.2	2.27	1.1	2.86	U		
-	0.69	-	1.5	1.3	-	1.1	-	1.57	W	
1.3	1.3	2.5	1.6	1.3	2.18	0.9	1.1	1.7	1.2	X
0.78	1.3	1.6	1.3	1.2	2.33	0.9	0.9	1.3	2.1	2.03 aa

TABLE 6 (Compare with Table 6 on page 53.)

Attractions

E 10	:	N 5	=	3
A 6	:	U 28	=	6
P 5	:	U 28	=	5
N 5	:	aa 34	=	5
W 9	:	aa 34	=	8
X 29	:	aa 34	=	25
E 10	:	X 29	=	9
N 5	:	U 28	=	4
N 5	:	X 29	=	4
A 6	:	N 5	=	1
A 6	:	E 10	=	2

Repulsions

F 42	:	P 6	=	1
L 53	:	P 6	=	2
D 52	:	W 9	=	4
A 6	:	aa 34	=	2
E 10	:	O 58	=	6

The simple trapeze is found primarily with asymmetrical trapezes, platters, and flat idols; these are all features which could be considered to correspond to the phase of foreign intrusion in Almeria. It is curious that simple trapezes show no attraction to stone axes.

Repulsions

One definite repulsion is that of callais and bowls, though the significance of this is not easy to see. Other weak repulsions are plain pottery and callais, flint blades and leaf-shaped arrowheads, simple trapezes and slate plaques, platters and axes. These last three are most interesting, because in reality they show three features of the indigenous cultures - trapezes, flint blades and axes, which are repulsed by immigrant or new features - leaf-shaped arrowheads, slate plaques and platters. The repulsion between simple trapezes and slate plaques is interesting, because slate plaques are considered as a development from flat idols, with which they were strongly associated, and simple trapezes were also strongly associated with flat idols. The difference of association between flat idols, simple trapezes and slate plaques may represent the difference in time between the arrival of the flat idols and the development of the slate plaques.

The analysis of dolmen finds in the west of the Peninsula shows that an earlier or more primitive stage characterized by simple trapezes, stone axes, and flint blades cannot be distinguished. In fact, the simple types such as trapezes are found in strong association with intrusive foreign types. If this evidence is valid it suggests that the more 'primitive' features are contemporary with the intrusive elements, which suggests that the possibility of an earlier group characterized by simple trapezes /

trapezes, axes, and small dolmens, is in fact very faint. It is not possible to discuss the evidence for collective burial in the Portuguese dolmens, owing to lack of evidence.

The dolmens of Salamanca, Beira, Galicia and Cataluna are discussed briefly on pp.230-239.

H. DISCUSSION

1. Impressed ware cultures

A study of the cardial impressed ware of Spain and Portugal showed three main centres of distribution in Cataluna, Valencia and the Tagus area. The non-cardial impressed wares, on the other hand, were commoner in Southern Spain and the Tagus area. Both groups had a markedly coastal distribution, but the non-cardial impressed ware showed signs of penetration inland. The different features of the various groups of impressed ware will be considered, under the headings of stone, bone, and pottery in order to see if connections can be established between them.

Stone axes were not well represented in any of the groups. They were commonest in the caves of the Tagus area, but could not with certainty be attributed to either the cardial or the non-cardial ware levels.

Stone bracelets were common in Hoya de la Mina and were found at other sites in Southern Spain, Almeria and Valencia (see p.91ff).

Flint blades are found in all the areas, but are not common, except in Valencia.

The simple trapeze is remarkably uncommon in all areas, and the asymmetrical trapeze is even less common, except in the Tagus area, where 44% of the sites have it.

Bifacially worked arrowheads /

Bifacially worked arrowheads are very uncommon in Cataluna and Southern Spain, but in Valencia 69% of the caves have tanged arrowheads and 63% have leaf-shaped arrowheads. In the Tagus area, 53% have hollow-base arrowheads and 42% leaf-shaped. The leaf-shaped arrowhead is found relatively commonly in all areas.

The rich bone industry associated with the Valencian cardial ware sites was noticeable; and on the whole bone work was found at most cardial ware sites.

Bone points were found in all areas.

Bone spoons were found in two Valencian caves, and a wooden spoon is known from Murcielagos cave in Southern Spain. Bone spoons are also known from Ereta del Pedrega (see p.229). Pottery spoons were found at Cabezo de Navarro (Alicante), Ereta del Pedregal, Mujer cave, Pavia and Vila Nova de S. Pedro. If all these are to be regarded as contemporary, the find from Vila Nova de S. Pedro indicates that they cannot be earlier than V.N.S.P. I. The bone spoons are on the other hand distinctive and may represent a different idea (see p.98).

Shell beads. A special type of oval-shaped bead, probably made from a pecten shell, was found at Hoya de la Mina, but these beads are a well known type also at Barranc del Castellet, L'Or, Pastora, Carricola, and Barsella in Valencia. This is an interesting link between the caves of Southern Spain and Valencia.

Shell bracelets are found in caves in Cataluna and occasionally in Portuguese caves. Their significance is discussed later (see p. 90).

Pottery was the chief distinguishing feature of the impressed ware cultures.

Cardial pottery /

Cardial pottery seems to be represented by two main forms - the bag-shaped pot and the amphora, and only occasionally are other forms found (e.g. La Sarsa). Impressed ware too maintains the same pottery tradition, but other forms are not infrequent. Cardial amphora are known in all the regions where cardial ware is found, Cataluna, Valencia and the Tagus area, though they are less common in the Tagus area. Non-cardial impressed ware amphora are known only from Southern Spain.

Bag-shaped pots are common in both cardial and non-cardial impressed ware groups, and are found in all the main areas - Cataluna, Valencia, Southern Spain and the Tagus area. In Cataluna and Valencia, bag-shaped pots decorated by impressions tend to be confined to the cardial groups, but in Southern Spain and the Tagus area they are found commonly with impressed ware.

Pottery decorated by rough chevron patterns painted in red was found at Montgo (see p. 22). Painted pottery is not known from other cave sites associated with impressed ware, but red painted pottery was found at Los Millares and Mesas de Asta. Sherds of red painted pottery were also found at Gar Cahal cave in Spanish Morocco, associated with cardial ware. They were below a level which contained beaker sherds, and have been likened to Serraferrlicchio ware in Sicily (Tarradel 1955). The evidence for red painted pottery is insufficient for any definite conclusions to be drawn.

Red slipped ware or Ceramica a la Almagra is a type of pottery with a burnished red slip and seems to correspond to that referred to as painted pottery by Gomez Moreno (1933). Examples of this type of pottery are known from Murcielagos cave (Zujeros), Cacin, Atarfe and Torremolinos (see p. 40) which are all sites in Southern Spain. According to Topp (private conversation) /

conversation) much of the pottery from L'Or cave also has a red slip. Pottery of this type is bag shaped, but it may have handles or lugs with complex perforations. It is decorated usually by incised lines arranged in angular patterns which are sometimes filled with white or red paste. Similar patterns are known on the Hoya de la Mina impressed ware and on the Sarsa cardial ware. This may be an indication that this pottery is contemporary with Hoya de la Mina and La Sarsa. The use of red to colour the surface or the decorative incisions of the pot continues into Beaker times (Gomez Moreno 1933, p.125-136). For this reason it is important to know if this type of pottery is earlier than beaker ware. The bag-shaped form of the pottery itself suggests an early date. The pottery from Murcielagos cave Zuheros was associated with a stone bracelet. Stone bracelets are common at Hoya de la Mina where pottery with a similar style of decoration is known. Stone bracelets can be linked with shell bracelets (see p. 92) which are typical features of the indigenous culture in Almeria (see p. 55). Thus it is suggested that this pottery is contemporary with the Almeria culture.

A group of plain pottery with a red slip was found in the Reguengos dolmens (Leisner 1951, p.71 ff). The Leisners refer to it as 'ceramica a la Almagra,' although the shape of the pots and the lack of decoration distinguishes it from the Zuheros red slipped pottery. The Reguengos graves with their slate plaques, asymmetrical trapezes and hollow-base arrowheads must be related to the phase of foreign intrusion in Almeria, and not to the indigenous group. The red slipped ware at Reguengos must be a later local development not directly related to the Zuheros type of pottery.

The origin of the Zuheros pottery type is uncertain. Santa Olalla refers to Cypriot parallels (Martinez Santa Olalla) but these are not exactly convincing. In Spain its relations seem to be with the impressed ware culture.

Spouts. The use of spouts on the impressed ware at Hoya de la Mina was noticed. Spouts are also known from Vitoria, Murcielagos and La Sarsa, and the complex perforations on the lug handles of the Zuheros pottery may be related to the spout (Fig.1, 18).

Horizontal tubular lugs are known from Montgo, Murcielagos, and La Cocina.

Vertical tubular lugs are known from Sarsa, Murcielagos, La Pileta and Furninha.

Small double handles were noticed at Montgo, Murcielagos, Torremolinas Mujer(?) and at Bovila Padro in Cataluna.

Projections above the rim were found on pottery at Hoya de la Mina and parallels are known at Eira Pedrinha, where the projection is an extension of a small lug on the rim (Mus. Coimbra) and at Cueva de la Mujer (Mus. Granada) where the projections are slashed cordons and again at Chateaneuf (Escalon de Fonton 1956, Fig.40).

Cord represented by slashed cordons was a popular method of decoration at Hoya de la Mina; other examples of this are known from a cave at Tapada de Torremolinas and Cueva de la Victoria, both in Malaga (San Valero 1948 and Gimenez, 1946) and from Parazuelos settlement site in Almeria.

Handled cups have been found at Toralla in layer F, del Pany and at L'Cr.

Pottery /

Pottery decorated by the boquique technique, frequently assigned to the impressed ware culture in the past, has recently been shown by Maluquer to continue into the Iron age (Maluquer 1958) and as this technique is not found in the earlier Portuguese or Spanish sites, it need not be associated with the impressed ware culture.

Summary

This survey has served to show the close relationship between the non-cardial impressed ware culture of Southern Spain and the cardinal ware culture of Valencia. Both of these groups contain features which cannot be paralleled in the Catalan cardinal ware culture. This may mean that the cardinal ware in Cataluna, which is characterized by amphorae and bag-shaped pots, is earlier than the Valencian group. The Valencian and Southern Spanish groups show a few contacts with the Almeria culture and especially with the indigenous element of that culture. In Portugal, although the simpler earlier forms are present, there seems to be relatively little contact with the other groups, which led to local development of decorated motifs, etc. which continued at least until V.N.S.P. I times.

Impressed wares in the whole Mediterranean area

It is now necessary to consider the Spanish cardinal and non-cardial impressed ware cultures in the light of finds from the rest of the Mediterranean area, in order to discover from which area the culture is most likely to have arrived in Spain.

Italy

Brea's excavations at Arene Candide revealed the priority of impressed wares over any other neolithic culture. The forms of the vessels /

vessels represented, however, are not known because the finds were mainly of small sherds. Forms which can be reconstructed are remarkable because they are unlike the Spanish ones (Brea 1946, Pl.XXXVIII, 1956, Pl.VII). Only one pot resembles the Spanish type (Brea 1946, Pl.XXXVIII, 7) but it is decorated by cordons and not impressions, nor are the cordons distributed around the pot in the same way as they are in Spain (e.g. Hoya de la Mina or Quimeres). There are at least two flat bottomed forms present (op. cit. 1946, Pl.CXXVIII, 1 or 1956, VII, 1,4), a feature which is never found in the cardial ware in Spain and rarely in the non-cardial impressed wares. At Arene Candide there is a tendency to all-over decoration rather than decoration in bands on the upper part of the pot, which is the commonest motif in Spain. Where decoration is found in bands at Arene Candide (op. cit. 1956, Pl.X, 3, 17, 20) it seems to occur almost exclusively on the cardial ware. Simple handles and lugs are found in Arene Candide as in Spain, but none of the complex handles and spouts are known at Arene Candide. At Arene Candide as in Iberia the associated finds of the impressed ware group are not very distinctive; a few stone axes, bits of flint, one trapeze arrowhead (slightly asymmetrical), a flint borer, scraper and blades, bone points, and pebbles cracked by heat (used for cooking?).

Finds from this level at Arene Candide which deserve special mention consist of a steatite cylinder, a perforated metatarsal bone and pottery spoons. The stone cylinder, be it an idol or a pestle, can be dated in the Peninsula to the phase of colonization from the East (V.N.S.P. I, L.M. I etc.). Perforated metatarsal bones are a feature which, in Central Europe, comes in at the time of the Cortaillod and Michelsberg cultures (information /

(information from Maier, Freiburg, see below p.96) and pottery spoons, which also occur at La Sarsa in the form of bone spoons were associated at Al Cova de l'or with a barbed and tanged arrowhead and a flat bottomed cup! Elsewhere pottery spoons are generally associated with plain pottery of the Chassey culture which is generally recognized as being later than impressed ware.

Thus the position at Arene Candide seems to be more complex than is allowed in the excavation reports and it is a very uncertain peg on which to hang the dating of the Iberian impressed wares. As in Iberia there is no evidence regarding the time of the earliest appearance of impressed ware at Arene Candide, but there is slight evidence to suggest that they survive into a later period. This may be due to the fact that Arene Candide occupies a position away from the main streams of cultural movement and forms an area of cultural backwater. At Arene Candide, the position of the impressed wares is, however, tied down by the appearance of Danubian elements above the impressed ware levels.

Another well known impressed ware site in Italy is Molfetta (Mayer 1904). Pottery from this site is in the form of a deep bowl mounted on a foot ring (Kutzian 1947, Pl.LXXIII, Stevenson 1947, Pl. 1,3) and a rough amphora in which the neck is no longer clearly defined (Bailloud and Mieg de Boofzheim 1955, Fig.XXV, 5). Decoration was crude and distributed over the whole pot. The people at this site lived in circular houses which Kutzian (1947, p.28) finds characteristic of the Kőrös culture. At Molfetta, Mayer found circular or sub-rectangular pits which contained crouched burials (Zambotti, 1943, p.32). In the Kőrös culture the dead were buried in refuse pits but always in a crouched position (Kutzian 1947, p.11).

In the Danubian levels at Arene Candide and in Cataluna, individual crouched burial was also practised. The resemblance between the pottery from Molfetta and from the Körös and Starcevo cultures is really remarkable (Kutzian, Pl.XVIII, No.5; Pl.XX, 3; Pl.XXI, No.3-5; XXII, 1; XXIII, 3-5; XXIV, 2-4; LIII, 1-5). It is also interesting to note that a vase published by Brea (1946, Pl.XXXVIII, No.6) from Arma dell'Aquila has close parallels in Körös forms (Kutzian 1947, Pl.XXV, No.2,3,4,6; XXVI, 2; XI, 1). Pottery and bone spoons are also found at Körös sites. (Kutzian, Pl.I, No.7; Pl.IX, No.1-7 and p.19). The culture following the impressed ware culture in Southern Italy was characterized by painted pottery, which has good Balkan parallels, but it certainly appears as if the contact with the Balkans was established in the impressed ware culture times.

Few of the sites from Southern Italy have been published, but a visit to Taranto Museum soon reveals the richness of the area in scratched, painted, ^{and} incised pottery. The most common motif in the incised wares is the rocking pattern - a pattern which is found only once in the Peninsula (in Portugal at Figueira?) but which is a very common motif in Africa.

The Stentinello impressed pottery does not resemble the Spanish material. The shapes are more varied, flat bases frequent and decoration more intricate, and altogether the ware is far better than the Iberian impressed wares.

The South of France

Recent publications of pottery from this area show good parallels for the Spanish material. Bowls from St. Veredeme cave, Tal des Gardon and Courtiou cave, Marseille (Arnal and Burnez, 1956/7, Fig.3, 3-5) are closely /

closely paralleled in pottery from Cova Freda, Montserrat. Flint trapezes (op. cit. Fig.3, No.7) and stone bracelets (op. cit. Fig. 3, No.8) are also found in impressed ware contexts.

The most important site in this area is Chateauneuf-lez-Martigues (Escalon de Fouton 1956). In this cave it was discovered that cardial levels followed levels with Tardenoisian flint industry and that the cardial pottery survived until well into the Lagozza phase. The flint work of the earliest cardial level shows little radical change from the preceding Tardenoisian level (op. cit. p.57). Shell beads are also found, but a definite new form - the arrival of which coincides with the arrival of the pottery - is the "perle-anneau polie". The bone industry includes points and spatulae, and of stone there are polished axes with oval section, adzes and querns. The pottery includes plain and decorated wares, the forms consist of the two basic forms known already from Spain, and decoration tends to be in bands. One vase has a pointed base (op. cit. Fig.38 A). Slashed cordon decoration also occurs.

Levels F4 and G4 at Chateauneuf contained cardial ware and Chassian pottery together. The flint blades are now bigger, trapezes are found and also a "fleche tranchante a retouche envahissante, qui est une importation chassienne". The amphora pottery type becomes rare, and the bowl type is very common; a vessel with a simple spout is also found (op. cit. Fig.53c) and pottery spoons make their appearance (op. cit. Fig.53B). Decoration of the pottery seems to become restricted to a mere band below the rim, though designs now include pendant triangle, herringbone, etc. (op. cit. Fig.57A).

Lagozza /

Lagozza culture pottery is found together with cardial ware in levels C3 and F3. The flint work shows no change and the bone and stone industry continue unchanged. Shell beads of a type similar to those found at L'Or and Hoya de la Mina appear for the first time at Chateauneuf-lez-Martigues. New pottery forms include the appearance of the Ripoli handle (op. cit. Fig.64). The handle on the cup from Cova de L'Or is probably a simpler version of this. Pottery spoons and a handled beaker form (op. cit. Fig.69A) also occur.

The Iberian sites appear to be more closely related to the earliest level at Chateauneuf-lez-Martigues on the basis of pottery form and decorative motifs than to later levels. There is a suggestion of contact between both areas, however, until the Lagozza phase, as is shown by the shell beads and the Ripoli handle type. This parallelism between the two areas justifies the use of the term 'Montserratian' by Arnal (1956/7) to include the cardial groups of Southern France and Northern Spain.

Further examples of sites with cardial ware in the South of France are Fontbregoua, near Salernes, where cardial ware was the earliest neolithic culture represented (Arnal and Burnez 1956/7). Paccard has discovered three similar sites in which the cardial level overlay mesolithic levels, while Segui has found cardial ware overlying a Romanello-Tardenoisien level (op. cit. p.12).

Although not directly related to the Peninsula, the excavations at Otzaki Magula in Thessaly have yielded important data for any consideration of impressed wares. At this site the excavator Milojcic was able to establish the following succession (Milojcic 1955, p.179-181):-

1. /

1. The lowest layer contained painted pottery which Milojcic compares with pottery from Nemea and Erimini; there are also lifelike idols. Milojcic considers this layer to be a forerunner of the Sesklo culture.
2. During the following phase plain monochrome or mottled pottery and pear-shaped idols were common.
3. After an interval "Barbotin" and "Zwicken" pottery appeared (Milojcic 1955, Fig.4, No.9-11).
4. It was soon followed by cardial ware which predominated for a long time.
5. Painted pottery of Sesklo type appeared.
6. Development of painted pottery (A₃x-B).
7. The end of the Sesklo period is marked by the appearance of darker paint and flame patterns.

The pottery from level 3 (1954 Fig.20) is, as Milojcic points out (1954, p.24) very reminiscent of the pottery from the Starcevo or Körös cultures, though no forms are illustrated. The cardial pottery which overlies this level is probably not strictly speaking cardial ware, but seems to be the result of comb impressions; the technique might be better described as pointille (see 1954, Fig.76) forms are again not illustrated. Decoration appears to be all over the surface of the vessel and not in bands or zones. This type of pottery is known from other sites in Thessaly (Larissa, Grundmann 1931, p.102-3) where various forms of impressed ware are found. They must be equivalent to levels 3 and 4 at Otzaki. Grundmann refers to finds of similar ware at Orchomenos, Levkas, Argissa and Dorfe Dendra. He illustrates a deep hemispherical bowl with lugs and all over impressed decoration.

Impressed wares are also known from sites along the North African coast, and some archaeologists consider that they are intermediary sites between the Aegean and Iberia. Little is known of the date of these wares in North Africa. Recent excavations by Tarradel in Spanish Morocco have shown that cardial ware continues until a comparatively late date. At Gar Cahal (Tarradel 1955) sherds of maritime bell beaker were found in the same level as sherds of cardial ware, which overlay a level containing sherds of painted pottery, possibly of Serraferlicchio type.

Cardial ware was found at Caf. Taht el Gar (Tarradel 1957-58, p.137-159) in a layer together with impressed and grooved ware sherds (op. cit. p.145) below a level containing sherds of maritime beaker. The most typical vase form in the impressed ware level at this site is the bowl. Cordon decoration is infrequent. The cardial sherds are decorated with the rocking pattern (op. cit. Pl.II) so common in North African sites and virtually unknown in Spain or Portugal. Other cultural features of cardial and impressed wares in Iberia - spoons, bone points, flint trapezes, stone axes - are not frequent in North Africa.

Summary

The excavations at Otzaki have shown that impressed wares are not primary in the East Mediterranean as they are in the West. They also showed that ^{in the} east impressed ware precedes cardial ware. The exact relationship between this so-called cardial ware of Otzaki and the true cardial ware in the west is not clear. The early impressed wares of Otzaki show definite resemblances to the Starcevo-Körös cultures and these in turn with the Molfetta neolithic impressed wares. How far the impressed wares at Arene Candide are a result of early Balkan influence is not /

not easy to decide at the moment, especially as Arene Candide appears to be in a culdesac area. The appearance of Danubian elements in the following phase at Arene Candide may be due to contact established during impressed ware times. Arene Candide is situated on the coast facing west and the lack of finds between the two areas must be remembered. The impressed wares may, however, have arrived by sea. Brea has pointed out (Brea) that the distribution of impressed wares is mainly coastal. The unity of finds from Southern France and North-eastern Spain suggests that they formed one cultural area in early cardial ware times and this unity may have been broken by the arrival of Chassey influences in the South of France. There is a possibility that some contact was maintained; this is suggested by the one or two parallelisms with the later phases of cardial ware at Chateauneuf which in turn indicates that Spanish cardial ware must survive at certain sites (e.g. L'Or) until the time when Lagozza was common in the South of France.

From which area in the Mediterranean cardial ware reached the South of France and the North-east of Spain is unknown. There are no good parallels for either the forms of the pots or the decorative motifs in Italy, the Balkans or North Africa. It seems highly probable that cardial ware entered Spain from the South of France and spread down the East coast, and even reached Portugal.

Although there is a slight difference in the cultural assemblages between cardial ware and impressed ware, they cannot be completely dissociated, because the vase forms and decorative motifs used in the non-cardial impressed ware groups are similar to the cardial ware forms and decoration. In the Tagus area and Cataluna the impressed ware groups seem /

seem to survive for some time. In the Tagus area there is evidence that they are still in existence during the V.N.S.P. I phase. In Cataluna the technique may continue in use until Argaric times as finds of large decorated amphora from sites such as Escornalbou, Joan d'Os, Foric, Sierra de Prades, indicate.

Finds of impressed wares come mainly from caves. Remains of large numbers of human bones from many of these caves (e.g. Furninha) suggest that the caves were used as burial places, over a long period of time.

2. Fosa grave culture

The significance and relationship, within the Peninsula, of this cultural group will be discussed after a survey of the Almerian culture and only its foreign relationships are described below.

The square-mouthed pots immediately suggest contact with the 'neolitico medio' levels at Arene Candide, where square-mouthed pots were found together with other Danubian elements such as spiral patterns, idols, and seals. Similar pottery was also found at Chiozza (Zambotti 1943, p.80, where single crouched burial among the huts of the village was the custom), at Pescara (Zambotti 1943, p.91), and at other sites in North Italy (Brea 1956, p.201ff, 1946, p.284). Brea (1946, p.286-7) deals with the Danubian parallels for this type.

The large ovoid pots with handles half-way down the side of the pot found in seven fosa graves have good parallels in Arene Candide (Brea 1946, Pl.XXXIV, No.2; 1956, Pl.XV, No.1,3,6,8,9 and 11) in the 'neolithico medio'.

The pottery type carinated near the base, and with perforated lugs situated on the carinations, is probably best paralleled in the Chassey group in France (Bailoud and Mieg de Boofzheim, Pl.XLIV, No.11 or Piggott 1953 /

1953, p.4,8, or Arnal and Burnez 1956/7, p.8, No.10,11 and 15).

Tanged arrowheads are found in the Almeria culture, but they can also be paralleled in Italy, where it is the commonest type at all times, and very crude examples of it occur at Arene Candide (Brea 1956, p.35, j).

The use of single crouched burial is a feature of Chiozza (Zambotti 1943).

This brief examination of foreign parallels suggests that the fosa graves in Cataluna have connections with the 'neolitico medio' phase at Arene Candide, and with the Chassey cultures in South France, but the Chassey cultures are generally considered to be later than the 'neolitico medio' at Arene Candide. If the fosa graves are regarded as contemporary with the 'neolitico medio' at Arene Candide, it means that carinated bowls are earlier in Spain than they are in the Chassey cultures of France, which must mean that they developed in Spain. There is, however, no internal evidence to suppose that they developed in Spain, and the origin of this bowl form must remain in doubt until a detailed study of their pottery type in Cataluna is made. The alternative would be to consider that the fosa graves were in use from 'neolitico medio' time until Chassey times.

Whether the features of the 'neolitico medio' phase arrived in Cataluna via Arene Candide or whether they came directly from the North of Italy is uncertain. The square-mouthed pots, and the burial custom are known at other sites in the North of Italy, but the large ovoid pot does not seem to be common outside Arene Candide.

The find at the cave of Santa Maria de Besora is of interest, because there eleven olive-shaped callais beads were found, together with a triangular shaped greenstone axe, and flint blades, all of which are typical features /

features of the fosa graves. From the same site came finds of perforated bone plaques (Vilseca and Fossas 1942, p.239ff). Bone plaques were also found in the middle level at Arene Candide (Brea 1946, Pl.XXX, No.1).

There seems to be no doubt about the relationship between the fosa graves and the 'neolitico medio' at Arene Candide type of culture.

Evans (1958, p.59) admits the Italian affinities of the fosa graves, and suggests that the site at Cantarranas (Madrid) is also a result of Chiozza penetration into Spain. At this site fragments of malachite were found which may reflect the popularity of green coloured stone, noticed in the fosa graves (callais and greenstone axes) rather than an early metallurgical industry.

3. Almeria culture (and related sites)

The Almeria culture was situated between two areas which were dominated by impressed ware cultures. Although few signs of the impressed ware cultures can be detected in Almeria, the culture retained its individuality. The more important features of the Almeria culture are discussed below.

The pottery of the Almeria culture is not especially typical - simple hemispherical bowls are known all over the Peninsula. A handled cup from Media Logie (Leisner 1943, Pl.5, No.2 and 50) is unusual and reminiscent of the cups from La Sarsa though the handle is smaller and the whole vessel less elegant. A typical vase form is shown in Fig.1, 16.

The amphorae of the Almeria culture cannot be compared to the cardial amphorae. Not only do they lack the typical decoration, but they also lack handles and even lugs are rare. The body is considerably wider than the /

the impressed ware forms and the neck tends to be more like a truncated cone in shape rather than cylindrical as in the impressed ware amphorae (Fig 1, 15). The Almeria amphorae can, in fact, be more closely paralleled in the vessels found in the Gouda necropolis in Italy than in the cardinal amphorae, and at Gouda they were also associated with tanged arrowheads and collective burial.

The vessel from Parazuelos has already been compared to pottery from Hoya de la Mina.

The famous pot from El Garcel has a pointed base. This was formerly thought to be a North African character. A vase from the lowest level at Chateauneuf also has a pointed base (see p. 79).

Reference has been made in passing to the presence of callais and steatite beads in Almerian graves. Olive-shaped beads of these materials were found in Puerto Blanco (Leisner 1943, Pl. 2, 5), La Pernera (Leisner 1943, Pl. 2, 6), Media Legoa (op. cit. Pl. 5, 2), and Fonelas (op. cit. Pl. 45, No. 2). Thick disc-shaped steatite beads were found in Las Churuletas 3 (op. cit. p. 71, Pl. 4, 1). Olive-shaped callais beads are especially characteristic of the fosa graves in Cataluna but thick disc-shaped beads of callais are also found. In Cataluna, outside the fosa graves, they have a limited distribution and are found only in a few caves. Big olive-shaped callais beads are not found in the megalithic graves, a fact which led Maluquer (1950) to suggest that the megalithic graves probably begin towards the end of the fosa grave period. If, then, such big green olive-shaped beads can be considered as having a relatively short time span, their appearance in the Almeria graves is very significant. It suggests that the beginning of these graves at least lies within the period when the beads /

beads were in common use in Cataluna. Thick disc-shaped callais beads were also found in Graves 9 and 25 at Los Millares (Leisner 1943, Pl.13, 1, 40-40, and Pl.18, 6, 3). Grave 9 can be assigned to the L.M. I phase. In this way it is possible to infer that there was an overlap between Los Millares I and the Almeria culture. If callais beads belong to a horizon which corresponds to the floruit or the fosa graves in Cataluna, and these are to be equated to the 'neolitico medio' at Arene Candide, then the beginning of the Los Millares and the 'neolitico medio' of Arene Candide must be broadly contemporary. Certainly the Almeria culture, the fosa graves, and Arene Candide 'neolitico medio' must be contemporary.

Flat idols in Almeria are usually made of stone. In other areas bone is more commonly employed for them. For the purposes of this study both stone and bone flat idols are considered here. In Almeria their arrival was considered to be due to foreign intrusion. They are found in other areas and in other cultures. Their distribution, which is mainly southerly, is of interest and importance because their appearance in other cultures forms a horizon which is useful for equating these cultures with the sequence in Almeria. Flat idols are known at the following sites:-

Cerro del Greal (see p.59).

Blanquizares de Lebor (see p.60).

Monte de la Barsella (see p.60).

Cueva de la Pastora (see p.61).

Montefrio (Tarradel p.60).

El Acebuchal (Leisner 1943, Pl.146, 9).

El Pozuelo 1 (Marques Cerdan and Leisner 1952, p.19 & 21).

El Pozuelo 3 (Marques Cerdan and Leisner 1952, p.21).

El Pozuelo 4 /

El Pozuelo 4 (Marques Cerdan and Leisner 1952, p.22).

El Pozuelo 7 (Marques Cerdan and Leisner 1952, p.25).

Olival de la Pega (Leisner 1951, p.236-252).

Monte Abraao (see p.175).

Samarra (see p.177).

Summary

To summarise, flat idols have a remarkable distribution throughout the South of the Peninsula. They occur always in collective burials, and frequently with tanged arrowheads (even in Portugal where the hollow-base arrowhead is almost universal). They do not occur at all with shell or stone bracelets, in which case it may be inferred that shell bracelets are an earlier feature or belong to a different cultural assemblage. They are sometimes associated with callais or green stone olive-shaped beads, and spirally grooved pinheads. There are suggestions of contacts with the first phase at Los Millares and Vila Nova de S. Pedro, but the majority seem to belong to an earlier phase. In Portugal, at Monte Abraao and Samarra they are definitely associated with material from Vila Nova de S. Pedro, phase I, and if this is so, could be considered as evidence to show the contemporaneity of the two groups.

The flat idols of stone or clay are very common in the Aegean area; and they are especially typical of the Cyclades. They are usually dated to the late neolithic-early Bronze age period.

Bifacially worked arrowheads are obviously an intrusive feature in the Almeria culture. The typical Almerian arrowhead is tanged in contrast to Los Millares where the hollow-base arrowhead is the predominant type. The source of the tanged arrowheads is uncertain, they may arrive in /

in Almeria (from Italy?) via the fosa graves of Cataluna, or they may have come across the Mediterranean with the flat idols. The distribution of tanged arrowheads is along the East coast, very few are known from Southern Spain or Portugal.

Shell bracelets in Almeria were found in 23 graves and were, curiously enough, with three exceptions, always in round graves without passages. They are also known from the settlement site of El Garcel. In 1929, Pericot published a study of these bracelets in Spain and listed 21 sites in Eastern Spain where they had been found. In Southern Spain, shell bracelets seem to have been found in Cueva de la Mujer and Monachil and to these sites can now be added the 23 referred to above from the Almeria culture. Pericot's sites included a hoard of shell bracelets found at Penya Roja in Alicante and sites in Cataluna, which are mainly caves or non-megalithic graves. (Fig. 1, 17).

Two-and-a-half rings were found in Cova Gran of Montserrat (see p. 16).

At Joan d'Os cave (Tartareu) - a bracelet (Colominas 1925).

At Cova del Tobacco (Gamarasa) - the fragment of shell bracelet (Colominas 1925).

At Cova de L'Aiga - a shell bracelet.

Cova de la Fou (Bor) - shell bracelets (also stone axes, some of greenstone - jadeite?).

More recently a fragment of shell bracelet was found at Cueva Bonica (Valliriana) where sherds of cardial ware were also found (see p. 18).

In most cases it would appear that shell bracelets can be associated with plain pottery, although in many cases, cordon decorated pottery is also found in the same cave. In the two instances where the bracelets were /

were found at the same site with cardial ware, there was no proof that they were associated with the cardial level, and the fact that they are not found at other cardial ware sites, especially La Sarsa and L'Or, suggests that they cannot be related to the cardial ware cultural group. The relationship with impressed wares is also dubious. If these bracelets can be regarded as approximately contemporary, and there is no reason against this, as they are not a common or widespread feature in any culture, it would also allow an equation to be made between the indigenous Almeria culture and the later caves of Cataluna and the fosa graves (tumbas non-megaliticos of Pericot (?)) and it further suggests that cardial ware at least was no longer a common feature where these bracelets were in use.

Shell bracelets are found in the neolitico phase at Arene Candide (1956, p.212) and Brea considers this as a result of the Danubian influence, spondylus shell bracelets being a common type in these cultures (Brea 1946, p.302), and this is further evidence for equating the Almeria culture with Arene Candide 'neolitico medio' phase (Brea 1946, p.302).

Stone bracelets are found very rarely in Almeria culture graves. Only from La Lampara is a complete one known and fragments are known from Cabezo de la Mata, and Llano Manzano 4, none of which have significant associations. They are also known from settlement sites in this area - El Garcel, La Gerundia, and Parazuelos. Stone bracelets are known from various impressed ware sites - Hoya de la Mina (Such 1920, Pl.2, 6), Zuheros, Murcielagos (Gongora 1868,) Mujer, Montgo, La Sarsa, L'Or, and San Valero (1943, p.18) includes Genista, Tesoro, Vitoria, Marmoles, Velez Blanco and Alfogas Leisners (1943, p.395) suggest that as stone /

stone bracelets are commonest in settlements and shell bracelets in graves, that the latter may be an imitation of the former, which were considered too costly for deposition in graves. A glance at the distribution of the above list, however, suggests that stone bracelets are commonest in areas where shell bracelets are rare (i.e. Andalucia and Alicante) and that they occur on the fringes of areas where shell bracelets are common (i.e. Almeria and Cataluna). As with shell bracelets, they are rarely found with cardial ware (only at Mongo, Sarsa, and L'Or). Most of the bracelets are a simple stone ring, but those from Montgo, Mijer, and Hoya de la Mina at least are broader and have various horizontal grooves encircling the bracelet. The closest parallel to this type is from Pollera in Northern Italy (Brea 1946, Fig.66C), though Brea does not indicate to which cultural phase this example can be attributed.

Shell bracelets can be used to show the contemporaneity of the Almeria culture and the fosa graves with some of the Catalan caves. Stone bracelets are probably to be regarded as contemporary with shell bracelets. This is suggested by their distribution which is almost mutually exclusive with shell bracelets; and also by the fact that they are not found at later sites such as Los Millares or Vila Nova de S. Pedro. This enables one to link the impressed ware sites of Sarsa, L'Or, Hoya de la Mina, Zuheros, etc. with the Almeria culture, which means that cardial ware in the Levante survived in this period, when it already seems to have been superseded by other groups in Cataluna, and that the impressed wares of Southern Spain survive at least until the time of the Almeria culture.

Two shell bracelets are known from two caves in Portugal, Mosqueros (Viera Natividade 1901, Fig.94) and Carrascas (Mus. Etnologico, Lisbon /

Lisbon, Unpub.). They may represent a westward extension of the Almeria culture, perhaps accompanied by flat idols.

The origin of shell or stone bracelets in Spain is uncertain. From the parallels quoted above, it is possible that they come from Italy into North-eastern Spain, and spread down the coast to Almeria. This does not explain the reason for the concentration of shell bracelets in Cataluna and Almeria and of stone bracelets in Valencia and Southern Spain.

Summary

There is evidence to suggest that the flat idols and bifacially worked arrowheads, arriving from the Eastern Mediterranean, were an important factor in the development of South-eastern Spain. They mark a clearly defined group which goes on into early Los Millares times.

When the users of flat idols and bifacially worked arrowheads arrived, however, there were already people in the area as is shown by the use of flint trapezes, shell bracelets, flint blades, etc. - all features which can be paralleled in other regions (see Table p.7).

The pottery from Parazuelos has already been compared to pottery from the Malaganian caves and certainly Cueva de los Toyos contained impressed ware and trapezes. There are, however, very few finds of impressed ware from the province, but whether plain ware superseded it after the arrival of ^{the} users of flat idols, or whether it was a plain ware element in the impressed ware which first arrived in Almeria is difficult to decide. A glance at the map showing the distribution of impressed ware shows a blank over Almeria and this may represent one of two theories:-

1. that the area was already occupied by plain ware using people when the impressed ware cultures reached Almeria and so they were forced to continue westwards and settle in Malaga,

2. /

2. the impressed ware culture was weakly established when the plain ware influences from the Eastern Mediterranean arrived and the former quickly incorporated the new ideas and pottery types.

The second theory is the more probable interpretation in view of the strong indigenous element which is seen in the Almeria culture.

4. Cave cultures of Murcia and Alicante

This small group of cave sites is of particular interest, because they show contact with several different cultural groups. It is unfortunate that there is no information available regarding the position of the finds in relation to one another. All the sites seem to have been used for burial purposes and the find of 92 burials in Blanquizaes suggests that the caves were in use for some time.

Analysis of the finds

Insufficient information is available regarding the pottery forms present at these sites for a detailed study to be made. At Cueva de la Pastora platters were found, these may relate to L.M. I types. At Blanquizaes a twin vase was found, the closest parallel for which is at Almizaraque, a site of L.M. I date.

A stone vessel with a wide flat base, narrowing towards the mouth was found at Blanquizaes (Leisner 1943, Pl.195, No.6). Several rows of chevron pattern were painted in red on the surface of it. Although painting in red can be paralleled at Montgo cave, red painting is also known at Los Millares. Stone vessels are also a characteristic feature of phase I at that site; and a similar vessel decorated by engraved lines was found in Huechar 2 (Leisner 1943, Pl.159, No.1).

Greenstone or callais olive-shaped beads found at Pastora and Castellet /

Castellet suggest contact with the fosa graves and/or the Almeria culture; an axe of green diorite found at Barsella, however, suggests that there was definite contact with the fosa grave culture.

Tanged and leaf-shaped arrowheads are the commonest types in the caves. The star-shaped arrowhead is a local development of the leaf-shaped type. In the caves, hollow-base arrowheads are very rare, but one was found at Pastora. In the rock cut tombs at Cerro Greal and Murcia, hollow-base arrowheads were found which suggests contemporaneity with the L.M. I phase. Flint trapezes are found in the caves, but are not common.

Flint daggers seem to have been found in the rock cut tomb near Murcia. This also suggests contemporaneity with L.M. I.

Bone combs. A bone comb was found at Barsella and Montefrio. Wooden combs are known from Blanquizaes and Murcielagos. Combs found elsewhere in the Peninsula can be dated to the L.M. I, V.N.S.P. I phase. The Montefrio comb resembles the Los Millares comb type, in that it has a small projection on top. The Barsella comb is broken. Neither the Blanquizaes nor the Murcielagos combs have such projections.

Flat bone idols were found at Cerro Greal, Blanquizaes, Barsella, Pastora. They are usually long and slender, but must presumably be related to the Almerian flat idol.

Phalanges and long bones decorated by the eye motif are found in Pastora. They are also known from Almizaraque (Leisner 1943, Pl.92; Ereta de Pedregal and Los Millares (see p.268). At Los Millares they were considered to belong to the first phase of occupation. The Leisners believed that they were related to the round idol cult, but a recent study of /

of "Fuss und Phalangen" idols by Maier (Freiburg) has revealed some interesting facts. He was able to show (1957) that the use of foot pendants, known in the near East at Tepe Gawra XIV etc., is distributed throughout the Aegean and Eastern and Central Europe as far west as Moravia (Mondsee, etc.). Pottery forms with feet or in the shape of shoes and stone models of human feet are found in Tel Brak, in early sites in Egypt, in Asia Minor, in the Bulgarian mound culture, at Gumelnitza, and in the Balkans, but they do not spread as far west as the foot pendants. He considers that the finds of stone and ivory sandals in Spain and Portugal (Almizaraque, Los Millares, and Alapraia II) are a result of the same tradition. He was able to distinguish a boundary in Moravia, west of which no footed vases or pendants, shaped like feet, are found, but where perforated phalange bones seem to take their place, often accompanied by perforated metapodian bones (Cortaillo Michelsberg, Northern Neolithic Cultures, etc.). Imitations in stone(?) of Metapodian idols ('prismatic bone idol' of Gaul) are found in Bulgaria and Gumelnitza, usually decorated with eyes and mouth. This combination of footed bowls and idols with eyes and mouth present in Bulgaria and Roumania is represented in Central Europe by phalanges or metapodian bones (i.e. feet) and fragments of perforated mandible (i.e. mouth)! A few perforated phalanges and mandibles are even known in Bulgaria, and at Tel Brak the footed vessels were found with idols decorated with large eyes. In Spain and Portugal, where the representation of sandals has already been pointed out, phalange idols are also common (e.g. Los Millares), and they are often decorated with eyes (Leisner 1943, Pl.83). Long bones are also known with similar decoration (Almizaraque or La Pastora). From Badajoz comes a stone idol with eyes (Leisner 1943, Pl.95, 9) which Maier, because of its shape, considers to be an imitation of /

of a long bone idol. Pottery decorated with eyes is also known in the South-east of Spain, including a footed vessel from Los Millares (Leisner 1943, pl.156, No.4 & 6). Phalanges and pottery decorated with eyes are also found together in Northern Europe.

Whether this custom or cult arrived in Spain from Europe via the North-east of Spain, or direct from the Eastern Mediterranean by sea is a difficult question to decide. A detailed study of the relative chronology of all the cultures in which it appears is necessary first. It must, however, be pointed out that there is a remarkable concentration of phalanges and eye decorated pottery in South-eastern Spain (see p.261).

Anchor shaped idols and pendants decorated by spiral grooves must be a local development as they are not found in either Almeria or Cataluna. The Leisners point out that there are rock paintings in the Sierra Morena which include the 'anchor' form (Leisner 1943, p.429 and Pl.178, C.3). Outside Spain, grooved horn pendants are known in Chassey contexts (Piggott 1953, p.431, Fig.5) and bone combs and flat clay idols are also known from this culture (op. cit. p.5, No.18). The fragments of pottery idols from Chassey are similar in the upper portions to the idol found in the 'neolitico medio' level at Arene Candide (Brea 1956, Pl.XXVIII, No.1-3).

This is an idol type with a very respectable ancestry in the Balkans and it can be traced in very similar forms in the Körös culture (Kutzian 1947, p.7, Pl.XLII, 5-6, XLIII, 1-6) (where even the long stick-like heads found at Arene Candide can be paralleled (Brea 1956, Pl.XXVIII, No.8-10 and Kutzian 1947, Pl.XLIV, No.8 & 9)). At Vinca where both features appear again (Kutzian p.19, Pl.LXII, 1,4,5,6, and Pl.LXIII, No.1-2). Elongated bone objects were also found at Vinca. Kutzian (1947, p.19, Pl.LXIII, 7-11) considers /

considers them as similar to the bone spoons of the Körös group (Kutzian 1947, Pl.XLVIII, Nos.14-20) but Vassits (Kutzian 1947, p.19) believed them to be idols. Their function as spoons is dubious owing to their slender form, and to interpret them as idols would be more interesting from the Iberian viewpoint. Kutzian quotes further parallels from the Arene Candide type of idol in the early neolithic cultures of Greece and Macedonia (1947, p.25), including Sesklo where grooved phallic(?) pendants, simple grooved pendants (Tsountas 19 , Pl.46, No.10 & 11), and flat idols were found (op. cit. Pl.37, No.5). The phallic pendants from Sesklo can be further paralleled in the pendants in the Cyclades. A cist grave group from there, now in the Ashmolean Museum, contained a silver bowl, a bone plaque, ornamented by two concentric rings and a dot, and a Djemdet Nasr cylinder seal and marble and shell idols.

It is not suggested that this survey must indicate the route by which certain objects or cultures arrived in the Peninsula, nor is it suggested that the cultures mentioned above must be derived from one another. What is suggested, however, is that all these parallelisms in such widely scattered and differentiated areas probably owe much to an ultimate common source from which these traditions have spread out and have, in different areas, been given different emphasis, or have combined with other traditions of a different background.

In this way it would be possible to see the idol from Cueva de la Pileta (San Valero) and two from Vila Nova de Sao Pedro (Jalhay and Paco 1945, Pl.LXI, No.5) as a result of this same tradition, and, if this is true, the curious four footed pottery objects (op. cit. Pl.XXII, 6) may also belong to the same tradition as the one which caused the /

the appearance of four footed vases at Körös (Kutzian 1947, Pl.XLVII, No.18 and Pl.XXXVI, No.8-12).

The Alicante grooved pendants were compared to some from Chassey. Other pendants found in the Chassey culture have wavy outlines (Piggott 1953, Fig.5, 15) which can be compared with flat bone objects with a wavy outline from the Bulgarian Mound culture (Gaul 1948, p.) and these are both areas which have phalange or footed idols.

Small bone plaques with two perforations were found at Barsella.(Fig.1, 6). Possible parallels were found in Palmela 3, but the latter may also be interpreted as imitation -v- perforated buttons. Small shell plaques with two perforations are known in the Badener culture.

Grooved headed pins were found at Barsella, Pastora and Blanquizares. Siret believed that this pin type belonged to the second phase of the Almeria culture, but Leisners (1943, p.452-3) suggest that it should be considered as "Voll-Kupferzeit". This pin is known from 42 sites in the Peninsula (see p.), all of which could be considered as contemporary with the Almeria culture or with L.M. I. Such pin heads are not found at Los Millares or Vila Nova de Sao Pedro. In Alicante this pin type is associated with grooved pendants and it is suggested that the pin may have had its origin in these pendants. The custom of using decorated pins seems to have arrived with the V.N.S.P. I colonists (vase headed pins, etc.). It is, however, possible that the bone points found in the fosa graves were used as hair pins because they are found around the head of the skeleton. In Beaker times, the custom of using pins was superseded by the use of buttons which the beaker folk brought back from Central Europe (see p.325).

Shell /

Shell beads of Hoya de la Mina type were found at Barsella, Pastora and Carricola. This is further evidence to suggest that caves such as Hoya de la Mina and L'Or in which similar beads have been found must have continued in use until the relatively late date suggested by the finds from Pastora and Barsella, etc.

Summary

The Alicante sites show contact with the impressed ware cultures of Southern Spain and Valencia, with the Almeric culture, and the first phase at Los Millares, and with the fosa graves. This tends to confirm the chronological overlap between some of these cultures already noted above. The fact that the Alicante sites show contacts with so many areas suggests that the sites lay across an important routeway in neolithic times.

In conclusion, the presence of idols and grooved pendants and decorated long bones in Alicante can be equated with similar phenomenon in the Chassey-Cortailled groups of France and Switzerland, and, in both areas, these manifestations appear to be the result of a common tradition especially associated with foot and eye symbols which has its origin in the ancient east. Whether this spread was due to the idea or religious form being adopted into various cultural groups or whether it was due to an actual spread of people, is difficult to say. Probably, in fact, both would be involved. Certainly, to explain the parallelisms between Eastern Europe and the Iberian Peninsula, which have already been mentioned (idols, eye motif, phalanges, sandals, four-legged pottery objects, square-mouthed pots and shell bracelets, etc.) would be difficult on the basis of either transference of ideas or people alone, and it is probably only when both aspects are considered against the background of the different cultural groups /

groups with which they can be united, and in which different aspects of the 'idea' can be emphasised, that a true picture will emerge.

5. Portuguese dolmen culture

With the exception of slate plaques, the Portuguese dolmens show no original features at all.

Pottery - Flatters can be related to V.N.S.P. I and L.M. I phase. 'Almagra' ware may be derived ultimately from the Zuheros pottery type.

Stone - Callais or greenstone beads are known in the fosa graves and in Almeria.

Slate plaques are considered by the Leisners to be local imitations of flat idols.

Slate croisiers - Slate croisiers are found in V.N.S.P. I contexts in the Tagus area. Their origin is unknown.

Flint - Simple and asymmetrical trapezes, which are known in the Almeria and impressed ware culture. Hollow-base arrowheads are typical of V.N.S.P. I and later periods. Leaf-shaped arrowheads are common in Alicante, but are also known from the indigenous group around the Tagus mouth (see p.199).

Bone - Flat idols are related to the Almeria culture.

The custom of collective burial is known in both the Almeria and the impressed ware groups.

Summary

Owing to the fact that no original features can be seen in the Portuguese dolmens, it would be permissible to regard them as derivative. A westward movement of the Almeria culture, shortly before the establishment of Los Millares, or perhaps as a result of it, may have encountered local groups /

groups descended from the earlier impressed ware cultures. The dolmen construction may have arisen as a result of an attempt to build Almerian-like graves out of the stone available in the area. The examples of round graves inserted into mounds covering dolmens may be the result of the arrival of influence of L.M. I - V.N.S.P. I date, perhaps in the form of expeditions looking for copper ores.

I. CONCLUSIONS

The earliest neolithic settlement in the Peninsula seems to have been due to the arrival of people using cardial ware. They probably entered Spain in the North-east and spread along the coast. In Southern Spain, however, the earliest settlement was by people using non-cardial impressed ware. The forms and decoration of this pottery enable it to be related to the cardial ware group. Cardial and impressed ware seems to have persisted in Valencia, Southern Spain and the Tagus area until quite late, but in Almeria new influences appear to have arrived by sea. They combined with the indigenous groups to form the Almeria culture. In Cataluna, the fosa grave culture may have arrived as a result of penetration from Italy. Other influences arriving about this time from the East reached Alicante where they helped to form a distinctive local culture, which was in close contact with the Almeria culture. The arrival of colonists at Los Millaries prevented further development in the Almeria culture and may have caused it to spread westwards. This resulted in the beginning(?) of the Alentejo dolmen culture. The impressed wares in the Tagus area probably continued until the arrival of colonists at V.N.S.P. and other sites in the area.

The chronological Table p.481 is a summary of these views.

CHAPTER TWO. THE COLONIES

A. Introduction

The cultural phases of the late neolithic and early bronze age in the Peninsula are extremely difficult to isolate from one another and it is not infrequent to find two or more phases present at the one site.

Neolithic is used in this context mainly to refer to the Almeria culture, and less frequently to the impressed ware cultures, although in some areas particularly, these survive into early bronze age times. Although the makers of the tholos tombs are generally regarded as having initiated the bronze age in the Peninsula, no very clear picture exists of their true cultural relationships and assemblages. This phase is generally recognised as being earlier than the bell beaker cultures, but bell beaker sherds are common at most early bronze age sites and are even found in the tholos graves. It is often difficult to know which features are to be attributed to the bell beaker culture, and which to the early bronze age groups.

An attempt to clarify the position and to separate these cultures is made in this thesis. The general characteristics of the neolithic in the Peninsula are considered, and then special attention is paid to the Almeria culture because the custom of collective burial in constructed tombs was practised in it. Similarly in a later chapter beaker finds and associations will be considered, not only in Spain but in the whole of western Europe. Features which are known to be earlier than the Argar culture but which can be shown to be not at /

at all characteristic of either the neolithic cultures on the one hand or the beaker culture on the other, can justifiably be considered as falling between them. In this connection the evidence from sites at which there is some information available regarding the stratigraphy of the finds will be considered first. The Leisners' observations at Los Millares are particularly important in this respect, and, because this site is in an area which was greatly influenced by the Almeria culture, it will be taken as the starting point for the survey.

It is first necessary, however, to consider the meaning of the term colony. The term was first applied by Siret (1893, p.) to Los Millares because he believed that it was a Phoenician trading colony. The Leisners preserved the term, but used it for the arrival at Los Millares of people from the east Mediterranean around the year 2,100 B.C. The present writer, after deep consideration, has adopted the term 'colony' and applied it to all early bronze age sites which show obvious connections with the east Mediterranean. These sites are better referred to as colonies and not cultures because the evidence available does suggest that they were small, heavily defended settlements of people with strong Aegean affinities, in an alien environment. As will be seen, the evidence does not suggest that there was an invasion of peoples who gradually spread inland, but rather that there was a series of isolated settlements along the sea coast in the south of the Peninsula.

The sections to follow deal with three important single sites and then with the various areas of the Peninsula, beginning with the areas round these three sites.

B. LOS MILLARES

a. The site and its excavations

Los Millares (Santa Fe de Mondujar, Almeria)

This site is in the province of Almeria about 20 Km. north of the capital. It occupies a strategic position on a tiny plateau, which is limited to the south-east and north-east by the deep valleys of the River Andarax, which enters the Mediterranean at Almeria, and its tributary the Rambla de Huechar. The plateau is bounded in the south-west by a low ridge, with four peaks on which are small forts overlooking the main site (Pl.2). The main site consists of a large settlement area, naturally defended on two sides by the river valleys and on the third by a complex defensive wall. On the rest of the plateau there are about five groups of graves, totalling about seventy-five graves in all. Similar graves have been found in the immediate neighbourhood.

Although the river bed is at the present day dry, there is evidence to suggest that it may have been navigable as far as Los Millares, in the period when the settlement was occupied.

The site was excavated in 1891-2 mainly by Pedro Flores, who was Siret's foreman, but Siret himself seems to have been present during the excavation of some of the graves. Siret referred to the site in a few of his articles but never published it fully. The Leisners published the graves and the material found in them, but they were limited to Flores' notebooks and Siret's memory for information regarding the plans and constructions of the graves. They made a detailed study of the grave goods from Los Millares and other sites in the /

the area, as a result of which, together with their study of grave typology, they were able to distinguish two main periods in the occupation of Los Millares. A further detailed study of the finds enabled them to divide the first period into four sub-phases, which are fully described in their publication (G. and V. Leisner 1943, p.566 ff). A summary of the characteristics of the two main periods is given below.

In future all references to the Leisners' publication of 1943 will be abbreviated to M.G.

The first period was characterised by simple corbel-vaulted graves with short passages divided into three compartments, the outermost of which often formed part of the forecourt. The use of porthole slabs to separate the compartments was not common. The roof was apparently supported by a centrally placed round pillar. Two or more stone circles were present in the mound, and further stone circles demarcated the area around the mound (M.G., Pl.85-7). In front of the entrance there was frequently a forecourt, to one side of which baetyloi were found within small enclosing walls (Pl.3 and 4). The grave goods found in these early graves were rich and varied: stone vessels, round idols, painted pottery, bifacially worked flint arrowheads, and copper axes and chisels were all common at this time, and although beaker ware was thought to be very rare in this period, the Leisners refer to finds of maritime beaker.

The graves which the Leisners consider to belong to this period are listed below, together with the sub-phase to which the Leisners assign them :-

Phase /

Phase I a : graves 1, 12 and 17; Phase I b : graves 2,7,9, 10,16,57 and Loma de Huechar 2; Phase I c : graves 5,15,23,31,34 and 47, and Phase I d : graves 13,18,19,34,41,43,48, etc.

The second period is typified by graves with more complex plans and frequent side-chambers. The majority of these graves are constructed of dry-stone walling (Pl. 9-11). Round pillars were replaced by slabs of schist as 'roof supports'. Grave goods were, however, impoverished, though beaker ware is more common.

The Leisners were able to offer several reasons for dating graves of period II later than the graves of period I (M.G., p.568). The most significant of these were the situation of graves of period I nearer the settlement, the development in the grave plans, and the predominance of beaker in the second phase.

The abbreviations L.M.I and L.M.II will be used in future when reference is made to these periods at Los Millares.

In order to check the conclusions of the Leisners, the site was partially re-excavated under the direction of Almagro and Arribas in 1953, 1955 and 1957. The present writer was privileged to take part in the excavations during the 1955 season. No excavation reports have yet been published and only a note on the results of 1955 excavations was read at the archaeological congress in Burgos in 1955. It is thus not possible to deal with the finds in detail, but the writer feels it necessary to discuss some of the results of that excavation in order to assess the value of the Leisners' theories. It must be emphasised that the views expressed below are purely personal.

b. Grave construction and ritual /

b. Grave construction and ritual

All grave numbers here are the numbers given by the Leisners, except when it is stated that it is an Arribas number.

About twelve graves were examined in some detail in 1955. Of these it was possible to identify four as graves published by the Leisners, namely graves 5,7,9 and 17; while another three graves which were not examined in detail were identified as graves 8,6 and 47. A study of these graves suggested that the type of construction employed could be divided into four main categories :-

- 1 : Cave burial, e.g. grave 39.
- 2 : 'Rundgrab mit Gang', e.g. graves 5,7 and 9.
- 3 : Corbel-vaulted passage grave, e.g. graves 60 and 65 and Arribas graves 34 and 43.
- 4 : Orthostatic passage grave, e.g. grave 8.

Cave burials are not common at Los Millares, despite ideal geological conditions. None were excavated in 1955.

The term 'Rundgrab mit Gang' is used here to include graves which the Leisners had classified as 'Wandsockel' graves, but there is evidence from the 1955 excavations to suggest that these were in fact more related to the round graves of the Almeria culture than to the corbel-vaulted graves of Los Millares. The evidence for this is summarised below.

The diameter of the chamber is an important factor in assessing the type of roof construction. The only two corbel-vaulted graves found intact at Los Millares (graves 14 and 45) had diameters of less than 3.30 m. and examination of other graves suggests that a diameter of /

of under 4.00 m. seems to be a fairly constant feature of simple corbel-vaulted chambers. (Larger diameters can be attained by means of angular buttresses, etc., e.g. Maeshowe in Orkney).

The graves of the early phase, however, tend to have large chambers, for example, the chamber of grave 7 measures 4.50 m. in diameter and that of grave 9, 4.25 m.

The size and construction of the mound must also be taken into account when considering the possibility of corbel-vaulting, because the mound acts as the counter-weight on the inner end of the large projecting slabs (Pl. 9-11). In this way the minimum size of the mound is theoretically controlled by the size of the chamber. A scrutiny of the measurements of chambers and mounds at Los Millares suggests that the maximum proportion of chamber to mound is approximately 1:3, although this varies according to the type of construction employed in building the grave, for example, graves built in a pit require a smaller mound than those built on a level surface. There is no constructional maximum to the size of the mound, and graves such as Cueva de la Pastora have enormous mounds, but their chambers are still under 4.00 m. in diameter.

The early graves at Los Millares often have mounds which are small in comparison to the size of the chamber, although the graves are built on a level surface. The chamber of grave 7 is 4.50 m. in diameter but the mound is only 10 m. across.

The mound must also be structurally strong enough to carry a heavy corbelled construction. The mounds of the true corbel-vaulted graves consist mainly of large stone corbelling slabs weighed down on their /

their outer edge by stone walls (pl.9 and 10) and resting upon a foundation which may be built of dry stone, or may be the ground around a rock-cut pit.

The early graves, however, usually have a foundation which consists of loose earth and stones, upon which no large corbelling slabs have been found (Pl.3, 5 and 6). Sometimes uncut stones, packed in clay and arranged in herring-bone formation, are found in the upper part of the mound (Pl.6 and 7). This walling shows no inward curve to suggest that it forms part of a corbel construction. The outer edges of these graves were usually defined by two or more concentric circles of large stone blocks set on end, for example, graves 5,7 and 9. These stone circles are too far from the chamber to have been able to support a corbelled vault. Grave 12 actually has no mound. A cutting into the mound of grave 7 showed that before Siret's excavations the mound was only 0.25 m. high and there was insufficient material in the chamber or in the neighbourhood of the grave to suggest that the mound had ever been much higher.

Both Siret and the Leisners believed that pillars had been used to support the roofs of the graves, because small stone columns or schist slabs were found in many graves (Pl.8). The stone columns frequently had hollows at one end, and it was supposed that further stone or wooden columns had been fitted into them, so that they would be long enough to stretch from the floor to the roof. It is, however, unlikely that a pillar of this sort would be stable enough to support a heavy capstone. Slabs of schist placed in the middle of the chamber would also be inadequate to bear the weight of a roof.

The /

The Leisners believed that the schist slabs were commoner in the L.M. II phase, but in 1955 some were found in the early graves, for example, in grave 5. It was noticed that these slabs were placed at right angles to the axis of the passage not parallel to it, as is indicated in the Leisners' plans. These pillars were probably not functional but were intended for some ritual purpose (see p.111).

The lower walls of the chamber were always lined with slabs of schist or stone, a feature which seems to have led the Leisners to classify the graves as 'wandsocket' graves. This lining was not intended to carry any of the weight of the corbel, but rather to cover the walls.

The early graves at Los Millares are distinguished from the earlier graves of the Almeria culture by the presence of a passage. A passage is only essential if the grave is in use over a considerable period of time and if there is a permanent type of roof on it. The early Almerian graves were used for collective burial, although they have no passages (e.g. Llano del Jaunton 5 contains 300 burials), and access must have been from the top, which implies that they had no permanent roof.

The length of the passage in a corbelled grave is related to the diameter of the mound, which, as has been noted, is related to the size of the chamber. In some of the round graves of the Almeria culture, for example Llano de la Atalaya 6, the passage is too short to have belonged to a corbelled grave, even though the Leisners indicate a few rows of corbelling on their plan (M.G. Pl.7,2 and 29,2). Similarly in some of the early graves at Los Millares the passage /

passage is rather short (graves 6,11 and 74) which suggests the graves were not roofed by a corbelled construction.

Thus it seems permissible to conclude that certain graves at Los Millares, particularly the earlier group, were never roofed by a corbelled vault, and should be classified as round graves with passages.

There are, however, certainly some corbel-vaulted passage graves. This term is used rather than the term 'tholos' in deference to the views of Daniel and Powell (1949, p.170).

At Los Millares there were various approaches to the building of these graves.

1. Some were built into a hillside; this method saved a considerable amount of construction (e.g. grave 40).
2. In others the chamber was constructed in a circular pit cut into the natural rock, the corbelled construction resting on the original land-surface around the edge of the pit (Arribas 34 and 43).
3. Other graves were constructed on a horizontal surface and the foundations were stone built, the 'mauerwerk' graves of the Leisners (e.g. graves 60 and 65 and Arribas graves 35 and 37).

There is little information regarding the first type of construction. Grave 40, which was re-excavated in 1953, belongs to this group. The chamber is 6.00 m. in diameter and it is preserved to a height of over 3.00 m. but the area to be roofed exceeds 3.00 m. in diameter and it is not easy to see how it was roofed.

The chambers of the second type of construction were usually sunk into the ground to a depth of 1.00 m. and the sides lined with schist /

schist to hide the natural rock walls. The passages were found to descend in slight step formation into the chamber; there was evidence from one grave that the passage had been roofed by schist slabs (Arribas grave 34).

In graves using construction of the third type, the corbelling rested on walls about 1.00 m. high and built of dry stone.

The orthostatic passage grave 8 was re-excavated in 1953, but there is no information available regarding its construction.

Some evidence for ritual practices in the graves was found during the 1955 excavations.

The graves were almost all orientated towards the south-east.

The passages were frequently divided into compartments by slabs of schist which have a large hole, called a porthole, cut in them. The portholes are usually about 0.60 - 0.80 m. high and 0.50 m. wide and are obviously intended to restrict the entrance. It must have been quite difficult to carry a dead body into a grave through four of these portholes (this is the normal number in a passage).

Blocking of the entrance was encountered in several graves and is well attested in the Leisners' publication. No signs of deliberate ritual have been found accompanying the blocking. In Arribas grave 43 there was no blocking and the porthole at the entrance had been closed by a single slab of schist.

Several forecourts were excavated. They were found to be more typical of the earlier graves. The boundary of the forecourt was sometimes defined by a low stone wall (Pl.3 and 9), and the Arribas grave 34 actually had a rock-cut forecourt.

Offerings /

Offerings for the dead were found in the forecourts, in the case of pottery usually in the middle of the forecourt or to one side of the entrance. Beaker sherds were found in the forecourt of Arribas grave 34. Baetyloi were most commonly found in this area, but usually grouped together in a special enclosure of stone slabs situated to one side of the forecourt (Pl.3 and 4).

The skulls of five children were found in the niche in the passage of Arribas grave 43, and Siret found eleven in the niche of grave 20.

Collective burial was practised in all the graves at Los Millares and the total number of burials calculated from the figures given by the Leisners was 1,135.

c. The Settlement

Owing to the lack of publication, it is not possible to refer to the settlement and more especially its defences, in any detail. It is, however, known that the settlement wall, which was stone built, was provided with semicircular bastions at regular intervals (Pl.12). Herring-bone walling was noticed in a stretch of wall exposed by erosion (Pl.13). The gateway was also very complex and shows devices for restricting and channelling the entrance. The wall did not cross the valley by means of a bridge as Siret suggests (Leisners 1943, p.18) because remains of the wall itself were found in the valley during the 1955 excavations.

The wall at Los Millares, though extremely complex, does not seem to have been situated to the best strategic advantage, and it is tentatively suggested that there was an inner wall which did not cross /

cross the valleys. There is a faint suggestion of this on the ground and it would be necessary from the defence point of view.

The defensive precautions at Los Millares were not confined to the immediate area of the settlement, but extended to the ridge overlooking the plateau, the four peaks of which were each crowned with a small fortification. Two of these were examined by Siret. He found that fort 1 (Pl.14) which was about 30 m. in diameter, was surrounded by a ditch and defended by a stone wall with bastions (Siret 1893, p.35-36; M.G. Pl.86). Fort 3, the other one examined by Siret, appears to be smaller and it has a semi-circular appendage on one side (M.G. Pl.86,4). Finds of pottery on the surface clearly indicate that these forts were contemporary with the main settlement at Los Millares.

Within the settlement, Siret excavated a rectangular-shaped house (M.G., Pl.86,5), and in 1955 remains of circular houses were found just inside the settlement wall.

d. The finds from the graves

A detailed analysis of the finds will now be given following the sequence: pottery, stone, flint, bone and metal. For the sake of convenience, the graves from Lomo de Huechar will be referred to as L.H.

Pottery: painted pottery has been found in graves 1,40,9,21 and L.H. 2. With the exception of the pot from grave 21, which is painted in red, all are characterized by zigzag designs painted in white, though the pottery shapes vary in each example. The vessel from No.21 is not unlike the vase type found in the Almerian graves with a narrow mouth /

mouth and a broad flattish base. Siret considered this vessel to be a Mycenaean import and this may have influenced his representation of the design, which looks vaguely like the Mycenaean octopus motif; this same vessel has a dotted design arranged in the shape of a triangle which is a design found on the symbol pottery (see M.G. Pl.20,1,6b). The other vessels consisted of a pot similar in shape to the above one, a deep hemispherical bowl, a rounded bag-shaped vessel with a marked everted rim, and a necked amphora type of jar.

Symbol pottery (Symbolkeramik) was found by Siret in nine graves at Los Millares (and in another grave in 1953). It was considered by the Leisners to belong to the early phase. (M.G., p.16). Pottery decorated with the eye motif has been found in six graves (7,57,4,15,37,23, M.G. Pl.156 and grave 17 - 1953 excavation). Pottery with the curved lines, which frequently accompany the oculus motif, but with two lugs instead of eyes, was found in graves 40, 9 and 16. Probable symbol pottery was found in five other graves (8,22,11 and L.H.2). The decorative motifs employed in this pottery can be paralleled in the decoration on round idols, phalange idols, and long bones from Southern Spain and Portugal.

Beaker pottery was found in three graves at Los Millares (3,18 and 38) and during the 1955 excavations beaker sherds were found in the forecourt of Arribas grave 34. These were all maritime beakers. On the surface of the site, however, sherds of beaker bowls can be found.

Stone: stone vessels were found in eight different graves at Los Millares. The vessels from five of these graves - 7,9,49 and 71, and /

and also 2 - are undecorated but show a variety of forms. Three of the vessels are approximately hemispherical bowls with flattened bottoms (M.G. Pl.12,1; 13,1; and 25,1) though one is more cylindrical in shape (grave 49). The fourth, which is bag-shaped with a thickened rim (M.G. Pl.21,1), is a common type in the Peninsula; this type will, in future, be referred to as the Alcala type (Fig.4,4).

Grave 40 and L.H. 2 yielded interesting decorated stone vessels. The one from grave 40 is cylindrical in shape with a flat base; the neck is narrower than the body of the pot and is decorated by a horizontal groove. The vessel itself is decorated by a criss-cross pattern executed in grooves (M.G. Pl.10,1). Vessel No.32 from L.H.2 (M.G. Pl.25,1) is particularly interesting. It is cylindrical in shape but has no neck, the base is quite flat and slightly wider than the mouth. Below the mouth and above the base there are three horizontal grooves, and the space between them is filled by two horizontal rows of incised zigzags. The second vessel from this grave (M.G. Pl.25,1,33) has a mouth which is narrower than the base; again the device of parallel grooves above the base and below the rim is used (there are five in each band) and the space between is decorated by incised cross hatching. This type has been called the El Carlero type because of the very fine example known from there (Fig.4,3). The two vessels from graves 41 and 24 are not illustrated.

In contrast to the Almeria culture, which was characterized by flat idols, the idols commonly found at Los Millares are round. They are made usually of stone, but also of bone. Stone, often alabaster /

alabaster, idols were found in eleven graves (40,74,12,5,7,9,16,57, 39,8 and L.H.2) and bone (in the case of grave 40, ivory) idols are known from three graves (40,5 and 8). The idols, whether of stone or of bone, are mostly the same type (Fig.4,6). The idol from L.H.2 is slightly different and shows more resemblance to the Portuguese cylinder idols (see Fig.4,8) than to the characteristic type at Los Millares.

The baetyloi are also basically cylindrically shaped objects, but they usually have convex sides, as opposed to the concave sides of the round idols and not infrequently are narrower at the top than at the base - a few even have a rectangular cross-section. The Leisners refer to finds of baetyloi from five graves (graves 15,16, 23,25,68) but baetyloi were also found during the 1955 excavations beside graves 5 and 7. These objects were always found within a small enclosure of stone slabs, to one side of the forecourt. Although eight forecourts were examined in 1955 and small enclosures noticed beside five or six of the forecourts, only two contained baetyloi, and these were two graves near the settlement considered by the Leisners to be early. The ritual or cult significance of these objects is suggested by their presence in the forecourt. It is probable that re-excavation of the forecourts of other graves will reveal further finds of baetyloi.

The stone columns, the function of which as roof supports has been repudiated (see p.111), found in many graves may, in fact, be related to either the round idols or the baetyloi and be some sort of cult object in the grave. The pillars frequently consisted of slabs of /

of schist and this can be paralleled in the baetyloi, because the group of baetyloi beside grave 7 also contained a small plaque of schist placed on end in the ground. There is no evidence for dating these pillars to either phase at Los Millares, though the Leisners considered that the stone pillars were more typical of the first phase and the schist ones of the second.

A flat idol made of slate was found in grave 8 (M.G. Pl.24,3, 13). A possible flat idol made from bone was found in grave 36 (M.G. Pl.4,1,4), and another in grave 7 (M.G. Pl.12,1,51), though it seems possible that the latter was actually a bone comb of the type found in grave 74 (M.G. Pl.10,2,8).

Callais was rare at Los Millares; nevertheless, thick disc-shaped callais beads were found in graves 9,18 and 25.

Stone axes and adzes were found in only seven graves at Los Millares.

A crude slate croisier was discovered in grave 17 (M.G. Pl.19, 1,11).

Two buttons from grave 18 may be made of alabaster. They are disc-shaped with perforated ridges on the under side.

Flint: arrowheads were very common at Los Millares. The hollow-base type was the commonest and was found in twenty-seven graves. Tanged arrowheads, which were commonest in graves of the early phase, were found in fifteen graves. Leaf-shaped arrowheads were found in eight graves. Asymmetrical trapezes were very uncommon but were found in graves 8,36 and 63.

Flint daggers were found in eight graves.

Bone (and ivory): /

Bone (and ivory): bone containers were found in three graves (5, 7 and 40). Five containers, four of which are illustrated, were found in grave 5 (M.G. Pl.16,1,68-71). They are all cylindrical in shape with from one to four grooves below the rim and a flat base. Three of the containers are decorated by incised cross-hatched ornament (Fig.4,2), the fourth is undecorated. The decorated bone containers are obviously related to decorated stone vessels of the El Carlero type which are found in grave 40 and L.H.2; in future this type of bone container will be referred to as the L.M.5 type. Undecorated bone containers with grooves below the rim will be referred to as the Cascais type because they are particularly common in the Tagus area and in the caves at Cascais (Fig.4,1; see p.181). The bone containers from graves 7 and 40 are represented by small decorated fragments, which probably belong to the L.M.5 container type.

Seventy-six phalange bones, which were probably used as idols, were found at Los Millares. The one from grave 7 has the eye motif painted on it (M.G. Pl.12,1,50), which links it with the symbol pottery also found at Los Millares. The Leisners believed that the phalanges were typical of the second phase at the site, but in fact they are found mainly in the graves of the first phase.

Flat bone idols have already been referred to under the heading of stone idols.

The presence of ivory is of particular interest because it is undisputable evidence of overseas contact, as ivory is not obtainable in the Peninsula. (Owing to the inaccessibility of the finds the writer /

writer has been unable to check the ivory objects.) The Leisners refer to both elephant and hippopotamus ivory at Los Millares. Ivory objects have been found in six graves (2,12,7,40,20 and 8) and material which may be ivory was found in four graves (31,5,71,59). The ivory objects are commonly in the form of awls (the examples from graves 40 and 8 and the three dubious examples from graves 31,71 and 59 are all of awls). Ivory beads are reported from graves 12,7 and 20; and in grave 2 there were small ivory tubes. Twelve of the small round idols in grave 40 are reputed to be made of ivory. The two fragments of bone containers from graves 40 and 7 are also possibly ivory. In grave 40 a simple comb is said to be of ivory and the exotic comb from grave 12 is also of ivory. This comb, which has two outwardly curved projections at the top end, is decorated by incised zigzag decoration with grooves around the edges (M.G. Pl.11, 1,26). In the same grave an oblong plaque with rounded corners was found. The plaque is decorated by grooved cross hatching on the upper side and has two perforated ridges along the edges of the under side. Similar objects found at Almizaraque and Alapraia are called sandals. Two segment shaped objects from graves 7 and 5 were said to be made of ivory. The Leisners were uncertain concerning the nature of several bone(?) objects in grave 5.

Metal: axes, adzes and chisels were found in fifteen graves, (twelve of which contained axes and seven chisels). The axes and adzes from three of the graves are not illustrated, but of the remaining nine axes, six have parallel sides and are long and slender in shape (graves 5,7,10,15,23 and L.H.2), and three also have parallel sides /

sides but are shorter and stumpier in shape (graves 40,31 and 34).

The chisels, with the exception of a tiny one in grave 12, are all relatively big, measuring about 10 cm. in length (Fig.10,5 and graves 2,7,32 and L.H.2).

A dagger found in grave 57 has a unifacial midrib and there is a nick in either side of the heel. Tanged daggers or points were found in four graves (20,22,54 and L.H.3), and a rivetted dagger in grave 28.

Awls were numerous but no characteristic types were noticed.

A curved copper knife is illustrated from grave 40 and copper saws were found in graves 14,37 and 42. Metal bracelets were found in grave 33.

e. Discussion

Before discussing the finds which must be attributed to the early phase at Los Millares, it is necessary briefly to consider which finds may be attributed to the local neolithic culture (the Almeria culture) or to the later bronze age cultures (the Bell beaker or the Argar cultures).

With regard to finds typical of the Almeria culture, there is surprisingly little. Flat idols were found in graves 8 and 36, which are both orthostatic passage graves. Asymmetrical trapezes were also found in these two graves, and in grave 63. Tanged arrowheads, though found in fifteen graves at Los Millares, are much less common than the hollow-base arrowheads at that site. They are usually found in graves of the early group, for example graves 2,5,7,9,16 and 40. Callais beads are rare, and never found in the more characteristic /

characteristic olive-shaped bead form. Other features of the Almeria culture, such as shell bracelets, stone axes and flint blades, are infrequent or non-existent at Los Millares. Thus Los Millares can in no way be considered as a development of the Almeria culture.

Beakers have been found in three graves at Los Millares, but, with the exception of a few crude tanged daggers, typical beaker features, such as bracers, Palmela points, v-perforated buttons and hammered gold objects, are unknown. Hollow-base arrowheads, which are typical of the beaker culture are, of course, common at Los Millares, but there is no way of distinguishing possible beaker arrowheads from typical Millares arrowheads.

There are very few finds from Los Millares which can be related to the culture of El Argar, though that culture forms a very definite horizon in south-east Spain. The rivetted dagger from grave 28 must be argaric and the bronze bracelets from grave 33 may be argaric or even later. It seems, in fact, as if Los Millares was un-inhabited by argaric times.

The bulk of the material from Los Millares must belong to a phase which comes between the neolithic and the beaker cultures, because there is definite indication of contact with these two groups and there is no evidence to date it very much earlier or later.

It will be clear from the survey that a certain group of graves contain a rich variety of objects which may be considered early because they show no contact with the Beaker culture. These are given in tabular form below. It should be noted that only graves with more than one of the finds mentioned in the table have been included. Objects such as phalanges, the dating of which is uncertain, will be discussed /

discussed later in relation to the results obtained from this table.

Object	Grave													
	2	5	7	8	9	12	15	16	23	25	40	57	67	LH2
Flat idol				x										
Callais					x					x				
Asymmetrical trapeze				x										
Painted pottery					x						x			x
Stone vessels			x		x						x			x
Bone containers		x	x								x			
Ivory	x		x	x		x					x			
Round idols		x	x	x	x	x		x			x	x		x
Baetyloi		x	x				x	x	x	x				
Copper axes		x	x				x		x		x	x	x	x
Copper chisels	x		x			x						x	x	x
Copper dagger												x		
Incised symbol pottery			x				x		x			x		
Plastic symbol pottery					x			x			x			
Total number of different objects	2	4	8	4	5	3	3	3	3	2	7	5	2	5

If the objects are early, the graves which contain them must also be early, and it is also possible to regard graves which contain the greatest number of finds from this group as the earliest.

The following sequence is obtained from a study of the distribution of the early finds - L.M.7,40,9,57, L.H.2, L.M.5,8,12, 15,16,23,2,25,67. All these are graves which belong to the Leisners' type of grave which is distinguished by simple plans.

Graves with only one find from this early group - not included in the table - are numbers 1,4,10,17,20,21,24,31,32,34,37,39,41,47, 49,68,71 and 74.

It will be noticed that this sequence differs from that proposed by the Leisners (M.G. p.566ff) though most of the graves of their first phase are found in one or other of the two lists given above.

The fourteen graves mentioned in the first list are considered the earliest graves out of the total of 76 graves. The objects, the dating of which is uncertain, must now be discussed in relation to this information.

Whereas unusual objects, such as stone or bone containers, round idols, or objects made of ivory, have a brief floruit period, which depends very much on fashion or contact with some distant source for its length, common objects, such as pottery or flint arrowheads, tend to continue in use for a long time. Thus, it is with difficulty that the flint arrowheads and daggers from Los Millares can be unequivocally assigned to one or other cultural phase, and deductions regarding this must be made on the percentage of times they occur in the early grave group.

The Leisners believed that phalanges belonged to the L.M.II phase because they regarded them as imitations of round stone idols by the indigenous inhabitants of the region. Phalanges were found in twenty-two graves altogether, but nine of the fourteen (or 64%) early graves contain phalanges. These early graves contain 44 (or 60%) of the total number of phalanges (74) from the site. Thus it seems clear that phalanges must be considered more typical of the early phase.

Flint daggers are known from only five graves, but four of these (i.e. 80%) are graves of the early group. They must also be regarded as more characteristic of the early group.

Tanged arrowheads are found in fifteen graves at Los Millares, nine of which belong to the early group. The total number of tanged arrowheads /

arrowheads from Los Millares is 95, but 83 (or 87%) are found in the nine early graves. Arrowheads with deep hollow bases (i.e. not the simple hollow-base type) are found in twenty-four graves at Los Millares, ten of which are graves of the early period. The total number of deep hollow-base arrowheads is 206, of which 135 (or 56%) are found in the earlier grave group.

Leaf-shaped arrowheads are found in eight of the graves at Los Millares, six of which are of the early grave group. A total of thirty-seven such arrowheads is known from the site, twenty-six (or 70%) of which were found in the graves of the early group.

Thus it is possible to infer that phalanges, tanged and leaf-shaped arrowheads, and flint daggers are also characteristic of the early period.

The following graves may now be added to the first list of early graves because they are known to contain features such as tanged arrowheads or phalanges which have now been shown to be early. They are listed below in order, the graves with the greatest number of finds being placed at the top of the list: Graves 10, 74, 41, 71, 21, 17, 32, 39 and 37.

The chief disadvantage of this method of approach is that it also indicates the graves with the largest number, or the greatest variety of finds. The results of this survey must be taken as approximations which are shown by the following facts to be fairly accurate :-

1. No grave with bell beaker is found in the early group.
2. The plans of the early grave group are simple.
3. /

3. The grave numbers of the early group are usually low, indicating nearness to the settlement, which, according to the Leisners, was an indication of an early date.

4. It is probable that the immigrants or colonists who built the early graves would have the richest and most varied grave goods.

5. The earliest graves were probably used for a longer period and are therefore likely to contain a greater quantity of grave goods.

That the division is largely a chronological one, and not merely the difference between rich and poor graves, is indicated by the fact that none of the objects considered in the survey of the early graves is in any way characteristic of the beaker culture.

There are fourteen graves in the list of early graves, and ten more can be added as a result of the study of the phalanges, etc. Of the remaining fifty-two graves, nineteen (or 30%) contain no finds of any significance. Thus the Leisners' general conclusion that the second phase at Los Millares is impoverished is undoubtedly correct.

In conclusion, it can be said that there is a phase in the history of Los Millares which can be attributed to neither the local neolithic or the beaker culture. This phase is characterised by a complex defensive system and numerous collective tombs which contain a rich variety of grave goods. The objects found in the graves will be discussed more fully later when it will be shown that many can be paralleled in the Aegean area. This information, together with the fact that Los Millares shows little contact with the local Almeria culture, justifies the use of the term colony for the site.

f. The finds from the Settlement

Unfortunately, there are few finds published from the settlement.

The Leisners published a photograph (M.G. Pl.154,5) of a very interesting pottery type found in a house at Los Millares. The vessel appears to be sub-rectangular in shape with a flat base, on the opposite side of which there are four hollow tube-like projections which open into the interior of the vessel. It is extremely difficult to know whether the body of the pot is hollow or merely concave. If the vessel is correctly placed in the photograph, it must be interpreted as a four-mouthed vessel. If, however, it is placed upside down, it could be interpreted as a four-legged vessel.

Another type of pottery found at Los Millares, which is of particular significance, is a very fine black ware which has a quite highly burnished surface. The associations of this pottery are unknown, but it was certainly found near the graves. The ware is fine and thin walled. The paste is good, with very fine grit. The shape of the pottery is unknown, as only sherds have been examined, but in many cases it has a sharply everted rim. The surface is black and burnished, and the firing has been good. This pottery contrasts in all respects with the usual pottery found at Los Millares. The normal Los Millares pottery is coarser and thick walled, the paste is usually quite good but has medium to large grit with a predominance of mica flakes. Shapes vary a lot but the platter form appears to be very common, according to the number of sherds found on the ground. The surface of the pottery is only lightly burnished and the pottery is red in colour, the firing being fairly good.

C. VILA NOVA DE SAO PEDRO

a. The site and its excavation.

The site of the Vila Nova de Sao Pedro lies north-east of Lisbon, in the north-west of the concelho of Azambuja. It is 13.75 km. west of Santarem, a town situated on the Tagus, and 9 km. north-west of Cartaxo.

The prehistoric site of Vila Nova de Sao Pedro lies near a small village of the same name. The local name for the site was 'alto del Castillo' and it was situated on a promontory of high ground cut off on the east, north and north-west by deep valleys and streams (Jalhay and do Paco, 1945, p.6). The isthmus which connects it with the village is fairly wide, but it has steep slopes on the east, north and north-west.

The site commands an excellent view of the surrounding countryside. To the west, there is a view up a valley to the Serra de Montejunto, which is outlined on the horizon. To the north-east, on a clear day, it is possible to see Santarem and the Tagus glinting in the sun. Local legend records that the prehistoric inhabitants of Vila Nova de S. Pedro decided to move. They destroyed their houses and set off to establish a 'more modern' town on the site of what is now Santarem (Jalhay and do Paco, 1945, p.7).

Excavations began first in 1936 under the direction of Cabaco, and were continued yearly thereafter by Jalhay, who was later assisted by do Paco. After Jalhay's death in 1950, do Paco continued the work, assisted by various people, the most important of whom was Sangmeister. He took part in the excavations of 1955.

The /

The methods and results of these excavations are published in numerous articles (see Bibliography, under Jalhay and under do Paco, and also in Sangmeister and do Paco 1956, footnote 1), but the greater proportion of the finds remain unpublished and are to be seen in Carmo Museum, Lisbon.

b. The fortifications

In 1955, during the presence of Sangmeister on the excavations, an intensive study of the defences was undertaken. The site was known to be surrounded by three concentric walls (do Paco and Sangmeister 1956, p.213). The innermost of these, which is here called the citadel, was examined in 1955 (Pl.15). It was found to have an inner diameter of 25.00 m. and an outer diameter of from 30 - 40 m. The wall was about 5.00 m. wide at the base and from 2 - 3.00 m. thick in the upper levels. It consists of two faces built of stones set in clay, the space between them being filled with stones, clay and earth. On the north side, the wall is preserved to a height of over 3.00 m. (Pl.16). Bastions were found at close intervals along the outer wall (Pl.17 and do Paco and Sangmeister 1956, p.214ff). Along the south-facing sides of the fort, Sangmeister detected signs of a destruction and rebuilding of the wall which were not seen in the northern side of the fort (do Paco and Sangmeister 1956, p.216ff). The wall in the south-west showed no signs of the first building phase. The entrance, which is situated in the south corner of the fort, is remarkable for its narrowness, being only 0.50 m. wide (Pl.18). It was also found to lie over the remains of a bastion of phase I.

In 1957 a section was dug across the second wall, and a bastion was /

was discovered, though this was not published until the following year (Diario de Noticias, 25/9/58) when it was considered the outstanding find of that year, 1958. This wall and bastion were also built of dry stone walling, but were not preserved to a great height. The diameter of the wall was about 80.00 m.

The third wall has not yet been examined in detail, but it is known to consist of two neighbouring rows of stone blocks (do Paco and Sangmeister 1956, p.213). Its diameter must be over 100 m.

c. The settlement

Remarkably little information is available regarding the settlement. Inside the fort itself, few remains of the buildings were found, though several silos were discovered. Remains of a circular building, with the beginnings of a corbelled roof, were found on the north-east side of the fort, close behind the wall. The walls are two stones thick and preserved to a height of 0.80 m., and the overhang achieved by the corbelling is 0.50m. Within the structure were remains of charcoal and pottery, which led to its identification as a pottery kiln. Do Paco states that no beakers were found within the kiln (do Paco 1957, p.8 of offprint).

Although huts are reputed to have been found outside the fort, the excavations of 1957 around the second wall revealed only numerous stone chips, and no sign of huts. Further excavations in 1957 outside the fort, on the north-west corner, showed the presence of some sort of domestic structure at some height above the natural rock. This structure was accompanied by quantities of plain pottery and bone, and lay below the beaker level.

In /

In 1939, in a large pit, an enormous pot was found, below which were the remains of a bovine skeleton. Another skeleton of the same kind was found nearby. This seemed to have been a deliberate burial (Jalhay and do Paco 1945, p.48-52, and do Paco 1943), and it was covered by the yellow clay which seems to have been laid down prior to the construction of the citadel.

d. The stratigraphy

As a result of a detailed study of the site during the excavations of 1955, Sangmeister was able to distinguish two main phases in the history of the site. The following is a summary of his views :-

Phase I, which is the earliest, consisted of a dark occupation layer which was found underlying the citadel wall and extending inside the enclosure. Sherds of 'imported pottery' were found in this level and particularly below the wall between the second and third bastions.

The next phase, which Sangmeister refers to as phase IIa, but which will be referred to as phase I in this thesis, is represented by the construction of the citadel wall. For this purpose a layer of yellow clay was laid down to form a level surface upon which to build.

The fortifications consisted of a stout stone wall supplied with bastions at regular intervals. The inner diameter of this citadel is approximately 25 m. The position of the original entrance is unknown. The black occupation layer at the base of the deposits inside the citadel probably represents the accumulated debris of the occupation before and after the building of the citadel wall. Cisterns and 'silos' /

'silos' in the floor of the citadel are probably to be dated to this phase.

There is no information available regarding the finds from this level.

It is uncertain whether the outer walls are contemporary with the citadel or are earlier.

This phase terminated with the partial destruction of the citadel walls.

Phase IIb of Sangmeister, referred to as phase II in this thesis, began with the hasty reconstruction of the walls. The bastions were now incorporated in an enormously thick wall (about 7.00 m.) and parts which may already have been partially destroyed were ruthlessly cut away. Only the bastions on the north side remained unchanged. The present entrance, which is only 50 cm. wide, must be associated with this phase.

Inside the citadel the old occupation layer with the silos and other finds was covered by the debris of the destruction. Above this another occupation layer, characterised by the abundance of beaker ware, occurs.

A reference to the finding of a few beaker sherds in the lower occupation layer, and the discovery of other sherds in the fallen debris outside the wall on the north side led Sangmeister to the conclusion that beakers were already known when his phase IIa was in progress. There is, however, the possibility that they arrived in these positions as a result of the destruction at the end of that phase. This still infers that beakers developed at least during the latter stages of Sangmeister's phase IIb.

The complete change in the pottery style and in other cultural features between phase I and phase II, and the lack of any gap between the two levels, suggests that the bearers of the pottery found in level II - that is, beaker - were responsible for the destruction which marked the end of phase I.

All future references to these phases at Vila Nova de S. Pedro will be indicated by the following abbreviations: V.N.S.P. I and V.N.S.P. II.

e. The finds

The finds will be discussed under the headings of pottery, stone, flint, bone, and metal.

Pottery: sherds of a special type of pottery, referred to as "import - keramik" by Sangmeister, were found in the layer under the settlement wall. Altogether more than thirty sherds of this pottery have been found at the site. It is possible to divide pottery of this type into two groups: the first is characterised by very fine pottery and the second by a coarser pottery which is probably an imitation of the first group.

Pottery of group I always has good paste and fine grit; the walls of the pots are thin; and the pottery is very well fired. The usual form is of a cylindrical pot with lightly rounded base, and the sides of the pot are slightly concave (Fig.3,3 and 7). The surface is usually highly burnished. Decoration is frequently by means of horizontal grooves below the rim and above the base and, occasionally, around the middle of the pot (Pl.19 and 20). The area between may be left plain and burnished, or it may be delicately and carefully stroke-burnished /

burnished. If this is so, the pattern is commonly of vertical rows of herring-bone or of cross-hatching (Pl.21-23, and do Paco 1958, Fig.5-7). The technique employed to produce this effect seems to have been to burnish the whole surface of the pot (probably mechanically) and then to execute the design in a series of single deft strokes with some smooth-ended instrument, such as a spatula. In the case of the pottery decorated by herring-bone design, it can be seen (Pl.22 and 23) that the vertical divisions were drawn in first and then the oblique strokes were filled in.

The imitation ware is distinguished from the imported ware by its rougher paste, less brilliant burnish, and by less well executed decoration. The chief form is again the cylindrical pot, but simple bowls are fairly common. It is not at present known if these bowls appear in the first group, but they are certainly typical of the second group. The decoration tends to include more grooves below the rim and above the base, and these are less regular and more faltering than the import group. Later, incisions take the place of grooves, while the herring-bone tends to become horizontal, rather than vertical, and less closely spaced (do Paco 1958, Fig.6c).

Decoration by grooving is also imitated by an even coarser type of pottery, which resembles neolithic pottery in texture and finish (Pl.24).

Platters are not infrequent (Fig.3,1) and, in some cases, are decorated by broad shallow grooves in herring-bone or other patterns on the inside surface. The date of the decorated platters is difficult to decide but, as the grooved pottery appears to be later in date /

date, these platters may also be late (see p.189).

Many sherds of pottery called grooved ware, characterised by a decoration in broad shallow grooves, were found. The forms represented seem to be mainly of a vessel with a small base, widening out towards the top and curving in suddenly to form a small mouth. The greatest diameter is to be found near the rim. The decoration seems to be confined to a broad band stretching from the rim to beyond the area of greatest diameter, usually arranged in parallel lines (Fig.3,2) and pendant triangles, filled with hatching, or a criss-cross pattern giving the effect of a four-petalled flower. A few sherds are obviously from platters but have similar grooved decoration on the inside. The attribution of this pottery to any period is difficult, but probably general opinion would place it in the Beaker times or in the Argaric Bronze Age.

A few rare sherds of symbol pottery were found, showing the eye motif, but this motif is better represented at the site by clay plaques with a perforation in each corner, and of unknown use. There are over 300 of these plaques, many of which are decorated, but, although the eye or sun motif is in use, it is not accompanied by the wavy lines familiar to the Los Millares symbol pottery.

About a dozen clay objects, which may have functioned as spit supports, are known. One is of particular interest. It is of solid clay, and roughly cylindrical in shape, but the top end branches into two horns which are inclined backwards. The middle of the cylindrical stand is perforated, and from the mouth of the hole on the front side hang two concentric semicircular incised lines, rather similar /

similar to the decoration on the idols (Fig.3,11). Another similar object, without the perforation and decoration, is also known (Jalhay and do Paco 1945, Pl.XXI, Fig.7), and fragments of others exist. Another type of spit support is cylindrical in shape with flat base and top, and slightly concave sides. These, too, are perforated (Fig.3,6).

Clay horns, some perforated near the base, have also been found.

A curious vessel of clay, roughly rectangular in shape, with three hollows in the upper surface, has been found. One side is decorated by vertical lines (Fig.3,5).

Curious thick arcs of clay, from which projecting heads, etc., have been broken, may represent animal figurines (Fig.3,9 and 10). In one case, the two ends of the arc have each been divided into two to form four legs (Jalhay and do Paco 1945, Pl.XXI, Fig.6). There is also a small clay object which has been squeezed into a form resembling a pig.

The bust of a rough clay human figure is known. The breasts indicate that it represents a female figure. The head is small, the eyes are marked by dots, and the nose by a projection in the clay. The most interesting feature is the presence of two concentric curved lines running from the temples to the mouth. These lines have good parallels in the cylinder idols and in the symbol pottery. The right arm of the figurine is held away from the body (Jalhay and do Paco 1945, Pl.XX, Fig.I).

There are two further fragments of figurines. Another figurine is less anthropomorphic, but consists of a clay bar, sub-rectangular /

rectangular in section and broader at the base, with a clearly marked pubic triangle filled in with dots (Fig.3,8 and also Jalhay and do Paco 1945, Pl.XXI, Fig.5). This is reminiscent of the idol from La Pileta (see p. 36) but the use of dots in this way is also known from a stone cylinder in Lagos Museum.

It is also necessary to mention here a bone figurine, found some years ago in which the head is big, the eyes are well marked, the nose is large and protruding, the arms are bent across the abdomen as in Cycladic figurines, and the legs are bent slightly backwards (Jalhay and do Paco 1945, Pl.XXI a-c).

Beaker pottery is found in profusion.

A four-footed undecorated vessel, sub-rectangular in shape, was found at the site (Jalhay and do Paco 1945, Pl.XXVIII, No.4).

Stone: three complete stone vessels, and fragments of a fourth, are known. Two are plain, undecorated, hemispherical bowls. The third vessel is cylindrical in shape, with a flat base. It has a narrower, vertical neck, decorated by three horizontal grooves. The fourth vessel is of the El Carlero type and is decorated by grooved cross-hatching.

Over 60 round or cylindrical idols have been found during the course of excavation, most of them badly broken. They vary in size from about 3 cm. in length to 15 cm. or over. Eighteen are decorated by two pairs of two, and in one case, of three concentric lines running from the top of the cylinder at either side downwards and inwards, but stopping short before they meet. At least five examples have small dots representing eyes (Fig.4,8 and Jalhay and do Paco 1945 /

1945, Pl.XX, No.3). Reference has already been made to the similarity in motif between these and the clay figurine (see p.137). There are, in addition, over twelve stone cylinders which are in reality fossilized encrinite stems. The divisions between the segments and the rayed appearance of the cross-section is clearly visible (Fig.4,7).

There is a stone object resembling a short pine cone on a stalk. Another, not dissimilar, object has a cylindrical top and a narrower stem. These are presumably ritual objects (compare with one from S. Martinho Fig.4,9).

Fragments of at least eight slate plaques were found. The usual decoration seems to have been of rows of triangles filled with criss-cross design.

There are over fifty stone axes, not many in comparison with the large number of flint objects. The axes do not have round but rather sub-rectangular or oval sections. They vary in size and finish. Butts are both broad and narrow.

Stone adzes number about twenty. Some are obvious imitations of metal ones as they are smooth and polished and have rectangular cross sections. Other adzes are more roughly made but similar in type, and others again are very tiny, measuring about 3 cm. in length.

About thirty-three stone chisels with almost square cross sections, narrow butts and broader cutting edges were found.

Flint: it was observed at Los Millares that flint daggers were typical of the first phase. At Vila Nova de Sao Pedro, there were /

were about fifty large, leaf-shaped, bifacially-worked flint flakes, which have variously been called sickles, daggers, knives or spears. The fact that some have gloss along one side suggests that some at least were sickles. The usual form is almond shaped and, in many cases, both ends have been squared off (Fig.8,3 and 4). In this respect, they are unlike the Los Millares daggers. In fact, from Vila Nova de Sao Pedro there is only one flint object which might qualify for classification as a dagger. It has a notch at either side of the base. One or two other points may have been spearheads and daggers, but there is no evidence of this (Jalhay and do Paco 1945, Pl.VII, 1-6, 15 & 16; Pl.VII b-f; Pl.IX, 1-6, 13-15).

Over 6,000 flint arrowheads have been found in the excavations. This number is easily the highest for any early bronze age site in the Peninsula. (At Los Millares less than 300 arrowheads were found in an area, many times bigger in size than Vila Nova de Sao Pedro.) The flint used varies in colour from white to pink and grey or black. About 90% of the arrowheads have hollow bases of one sort or another. There are over 600 with straight bases, and five with very slight tangs. There are only two asymmetrical trapezes and one symmetrical trapeze of rock crystal. Leaf-shaped arrowheads are not known. Owing to the fact that hollow-base arrowheads are typical of the bell beaker culture, it is not possible to discuss the type of arrowheads which might go with the first phase at Vila Nova de S. Pedro.

Mention must, however, be made of certain rather distinctive types. There are two arrowheads with deep hollow bases and nine with comparatively deep bases. This is a type found commonly at Los Millares (Fig.2,22).

A special variety of hollow base arrowhead is very long and slender with concave sides and has been referred to as the Eiffel Tower type (Fig.2,17 and Jalhay and do Paco 1945, Pl.X, No.5,6; Pl.XI, No.21; Pl.XII, No.i).

Another type typical of Vila Nova de Sao Pedro is the mitre type (so called because of its resemblance to a bishop's mitre) found there in different varieties and sizes (Fig.2,19 and 20, also Jalhay and do Paco 1945, Pl.X, Nos.45-63; Pl.XI, Nos.23-33; Pl.XII, Nos. c-d).

Finally, a simple hollow base arrowhead, but interesting because of its broad base, has been found in limited numbers (Fig.2, 18, also Jalhay and do Paco 1945, Pl.X, Nos.64 & 69; Pl.XI, No.38).

There are probably about 1,000 flint blades which vary in size from very tiny blades to big ones over 15 cm. in length.

There are about thirty borers.

There are about ten long, thick, blade scrapers, about eleven small thumb nail scrapers, and about five large, round scrapers.

Saws number about twenty-one and many show signs of gloss.

Bone: about seven complete, or almost complete, bone containers are known from Vila Nova de Sao Pedro, and there are thirty fragments of others. There are at least six almost plain, bone, tube-like containers, (All other containers are marked by a characteristic constriction below the rim.) two almost complete containers, and eight fragments of other, simple bone containers of the Cascais type (Fig.4,1). There are four more fragments of containers which appear to have been similar to the above group, except that they had four or more narrower grooves in the constriction below the rim.

Two almost complete containers, and fragments of others, resemble the bone vessel in grave 5 at Los Millares, though the two containers do not have multiple grooves below the rim. All are decorated with the familiar cross-hatching. Other fragments show very similar decoration but have the cross-hatching arranged in panels separated by vertical bundles of lines (do Paco and Sangmeister 1956, Pl.16, No.29). Three other fragments are decorated by zigzags or herring-bone design (do Paco and Sangmeister 1956, Pl.16, No.28) and, in one case, this design is also divided into panels. An unusual fragment has a design apparently divided into squares or triangles filled with oblique lines. Finally, there are three fragments of a container which is decorated by circles formed by grooves and leaving a raised area in the centre.

There are over seventy pins with decorated heads from Vila Nova de Sao Pedro. Groove-headed pins have already been discussed with regard to the neolithic cultures, but they are not found at Vila Nova de Sao Pedro.

The commonest pin type at Vila Nova is the vase-headed pin (there are over twenty-seven of them) which consists of a globular shaped part between two horizontal discs. The lower disc forms the head of the shaft but sometimes the lower disc is omitted (Fig.9,4 and Jalhay and do Paco 1945, Pl.XV, 15 & 18; Pl.XVI, 7-9,12,13,15,16, 22). A possible degeneration of this shows merely a widening of the pin shaft towards the tip where it is encircled by two grooves (Jalhay and do Paco 1945, Pl.XIV, No.28). Another type, which may be a reject from the manufacture of the vase-headed pin, is the disc-
or /

or nail-headed pin (there are six of them) in which the shaft ends in a horizontally placed disc (Fig.9,5, also Jalhay and do Paco 1945, Pl.XV, Nos.16-17). The spindle-shaped pin may again be a simplification of the vase-headed pin, or it may be something quite different. The pin, as its name suggests, has a spindle-shaped head (Fig.9,7 and Jalhay and do Paco 1945, Pl.XIV, 32 & 39). In one case, this head is decorated by engraved lines criss-crossing, and giving the effect of a pine cone (Fig.9,6) and is especially reminiscent of some 'ritual' pine cones of stone from various sites (see below, p.191). Thus the spindle-topped pins (of which there are about fifteen) may be representatives of this.

There are five pins with plain undecorated tube-like tops (Fig.9,8). The heads of a further three pins are flat and splayed out towards the top, the end being quite straight (Fig.9,13). These are called spatula-ended pins. A further two pins are of a similar type but have curved ends (Jalhay and do Paco 1945, Pl.XIV, below 3-6 & 24, also Pl.XV, 31). Another unusual pin has a similarly placed head on the end of a long flat collar, at the top of the stem (Fig.9,14 and Jalhay and do Paco 1945, Pl.XVI, 18). There is a pin with a flat circular head and a short collar which is decorated by engraved cross-hatching (Fig.9,10 and Jalhay and do Paco 1945, Pl.16, No.14) and there is another like it but without the collar (Fig. 9, 11).

Finally, two pins of particular interest, especially from the chronological point of view, were found. One is again flat but must represent a bird, the beak and tail of which have been broken off (Fig.9,2, also Jalhay and do Paco 1945, Pl.XIV, 25). The last one is a /

a small model bird with eyes, beak, and wings. The wings are decorated by oblique hatching. This bird is placed at right angles to the pin shaft (Fig.9, 3).

Six bone needles have been found (Jalhay and do Paco, 1945, Pl.XIV, 10-12).

Bone points number over 100. Most are long bones of small animals cut obliquely to give a point (Jalhay and do Paco 1945, Pl.XIII, 1-15). There are three bigger objects which have been cut in a similar manner to give a tranchet edge (Jalhay and do Paco 1945, Pl.XIV, 2-5).

Simple bone handles are fairly numerous: there are twenty of them (Jalhay and do Paco 1945, Pl.XIII, 16-20).

There are over seventy bone spatulas in various sizes.

There are twenty-three v-perforated bone buttons from Vila Nova de Sao Pedro, but they must belong to the beaker level as they are a typical associate of beakers (see p.303).

Small bone cylinders, usually with a constriction below the top, are known from Vila Nova de Sao Pedro (Fig. 4,10 and Jalhay and do Paco 1945, Pl.XVI, 2 & 3 and p.41,3). There is also reference to ivory cylinders from this site. Nothing is known of their position or function at the site. They will be referred to as Vila Nova cylinders in future.

Metal: over eighty metal objects have been found at Vila Nova de Sao Pedro, and the finds of crysole and copper ore indicate that there was probably a metallurgical industry at this site. Much of the metal is obviously beaker and Argaric in date, e.g. Palmella points, tanged /

tanged daggers, rivetted knives, a big axe with a splayed cutting edge, and a big Argaric-like chisel. There are, however, five axes and three adzes of a type similar to those found at Los Millares, i.e. long and with broad butt and hammered cutting edge (Fig.10, 3 and 4). These have been called Tagus axes. There are two curved knives (Fig.10,9) as in grave 40 at Los Millares, but the analysis has shown that one is certainly made of bronze, thus suggesting that it is later in date, though no parallels are known from sites of Argaric date. Saws and knives are found, but are difficult to distinguish from beaker hammered metal work. There are twenty-five tiny chisels, the dating of which is also uncertain (Fig.10,2). There is a dagger which has a suspicion of a mid rib, and may be the same as the Los Millares 57 type, but it is more likely to belong to a local group of middle bronze age date in the region (see p.425).

f. Discussion

Vila Nova de Sao Pedro shows little affinity with the neolithic groups of the area. This is particularly shown by the number of bifacially flaked arrowheads and the lack of slate plaques. The lack of microlithic trapezes is also remarkable - only three in over six thousand arrowheads. The difference in pottery type is also noticeable. Hence, as at Los Millares, it is not possible to see the emergence of Vila Nova de Sao Pedro as a natural development of the local neolithic cultures. Bell beaker influence is strong - stronger than at Los Millares - and this is shown particularly by the pottery itself; but also by the v-perforated buttons, metal types, and arrowheads.

There remains, as at Los Millares, a vast quantity of material which /

which has no stratigraphical information attached to it (with the exception of the stroke burnished pottery which was found under the settlement wall and thereby belongs to V.N.S.P. I). On the basis of the relative position of the beaker ware to exotic stroke burnished pottery, it is possible to equate V.N.S.P. I approximately with L.M. I, and by comparing finds from the two areas, it is possible to define more closely the features characteristic of V.N.S.P. I.

The stone and bone vases are obviously related to those from Los Millares. The cylinder idols relate to the baetyloi, or the round idols, and their decoration, by means of two concentric curved, links up with the symbol pottery of the south-east. Platters, too, are common in the south-east.

The metal types, which cannot belong to the beaker period, or to El Argar, owing to their type, can be paralleled at Los Millares and hence attributed to the V.N.S.P. I phase.

The importance of flint work over stone is typical of both sites, and though the arrowhead types are different, there are a few at Vila Nova de Sao Pedro which are similar to Los Millares. Although many of the Vila Nova de Sao Pedro arrowheads must date to beaker times, it is perhaps permissible to isolate the mitre and Eiffel Tower types, which are not characteristic of the beaker culture, and to suggest that they may belong to the V.N.S.P. I phase. The vast number of bifacially worked flakes or 'daggers' at Vila Nova de Sao Pedro, are probably to be attributed to the early phase too, on account of the importance of flint work then and also because flint daggers were found to be characteristic of Los Millares I.

If cylinder idols can be attributed to the early phase at Vila Nova de Sao Pedro, it is likely that other cult objects are representative of this phase too, for example, the pine cones, lunulae, and sandals. (The find of an ivory sandal in an early grave at Los Millares helps to confirm this.)

Pins were not found at Los Millares, but a case can be made for the early dating of the groove-headed pin in the south-east. Pins were not used by the beaker folk, who preferred buttons, and thus it is possible, on these grounds alone, to assign the pins to the V.N.S.P. I phase. This is confirmed by their exotic nature in the Peninsula and their east Mediterranean affinities (see below, p.266). The spits, too, by reason of their eastern Mediterranean parallels (see below, p.256), can be assigned to this period.

With such an abundance of finds, it is probable that a study of the sources of raw material used in their manufacture would give interesting results.

Pottery: microscopic examination of sherds of imported or grooved ware from Vila Nova de S. Pedro (see p.189) showed that the grit and backing material contained in the clay could have come only from the Cabo da Roca region of Sintra.

Stone: there is reference to an axe made of "gres" which is a rock not found in the neighbourhood of Vila Nova de S. Pedro (Jalhay and do Paco 1945, p.21).

Flint: it is apparently not found in this region but there is a likelihood that it is found some distance away (Jalhay and do Paco 1945, p.33).

Metal: /

Metal: remains of crisole and ores have been found and also escorias from working the metal. There is no doubt that there was an active metal industry at Vila Nova de S. Pedro. Jalhay and do Paco (1945, p.29) state that there is no copper in the district and suggest that the ore may come from Alentejo. Calcopite and Bournite are known from Caldas da Reinha (Calderon 1910 and Gomez 1895) but Gomez also refers to native copper from Caldas (ibid. p.199ff). Aveiro, too, seems to have different copper ores, mainly of a type which is more difficult to smelt. The knowledge that there is native copper near Caldas da Reinha is particularly interesting because there is a big concentration of V.N.S.P. I type metal objects in that same region (see map IX) and it would be difficult to explain the concentration unless there was a local supply of copper ore.

D. MESAS DE ASTA

a. The site and its excavation

The site of Mesas de Asta, or Asta Regia, is perhaps best known for its Roman remains. During recent investigations, however, the excavator, Esteve Guerrero, found evidence of an earlier bronze age level (Esteve Guerrero 1945, p.35ff).

Mesas de Asta is situated in the swampy zone near the mouth of the Guadalquivir river north-west of Jerez and 20 km. south-east of Trebujena. The site itself occupies a small area of high ground consisting of a few small hills which attain a height of 81 m. Esteve Guerrero believes that there is evidence to show that Mesas de Asta was a port in Roman times.

In the course of normal investigations in one particular zone, Esteve Guerrero found Arabic and Iberic pottery, a Roman coin, and an iron axe, but from this same zone came the early bronze age pottery (Esteve Guerrero 1945, p.35). He also found remains of post holes, but was unable to reconstruct the type of building of which they had formed part. The excavations were continued in 1945/6 in the south-east corner of the settlement and again occasional sherds of incised beaker wares were found in different contexts (Esteve Guerrero 1950, p.17ff). Fragments of an almost complete vessel of red burnished ware were also found, together with 'fusaiolas' and sherds of burnished pottery, and remains of walls (Esteve Guerrero 1950, p.18). Thus the information available regarding the stratigraphy and associations of this pottery is extremely limited.

b. The finds

Stone: rather rough stone axes and adzes, rough stone balls or hammers(?) (Esteve Guerrero 1950, Pl.VII), clay or stone(?) spinning whorls which are either sub-conical or stumpy and barrel-shaped (Pl.25 also op. cit. Pl.VIII).

Flint: simple flint blades with little or no retouching (Esteve Guerrero 1950, Fig.7) but also small flint blades with a serrated edge (op. cit. Fig.8,6-8) which are sometimes glossy and of a type similar to those used in an Argaric sickle at Mas de Menente (see p.394), boars' tusks, large sea shells, and bone points.

Metal: a small copper or bronze ring, remains of a square sectioned awl, and two amorphous fragments of metal were also found.

Pottery: /

Pottery: the pottery is undoubtedly the most interesting of the finds. It is possible to divide it into the following classes: simple burnished pottery, coarse plain ware, painted pottery, pattern-burnished pottery and beaker ware.

There are several sherds of simple burnished pottery and they are all remarkable by reason of their very high, almost glossy, burnish. The paste is good with fine grit, usually greyish in colour, and the firing was also adequate. A common shape for these vessels is a carinated bowl with a rounded base and a short erect neck (Fig. 3, 4). There are slight variations on this; for example, one sherd has a slightly everted neck and a sharp carination; another has a double perforated lug on the carination; and a further sherd shows a long shapely everted neck, but there is not enough of the sherd to show the carination. Another group of bowls appears, from the two rim sherds, to have been deep and straight-sided, and there are large semi-circular lugs near the rim (Pl. 25). The colour of this pottery is usually grey, sometimes nearly black. Occasionally a streaky effect is produced by a yellow ochre colour through the grey. The burnish, which is sometimes almost glossy, appears to cover the whole pot, and in at least one case is known to extend to the inside rim. The inside of the pottery is usually matt and unburnished. A bowl, similar in shape and fabric to the common type mentioned above, is a definite red colour, and has a smooth, well-finished, burnished surface, which is not at all glossy but has a rather matt effect. It also has an omphalos base (Fig. 3, 4).

Sherds of an almost complete vessel were found during the 1945/46 excavations /

excavations at the site, and it was published as an early bronze age vessel (Esteve Guerrero 1950, Pl.VI). It is fairly large with a globular body, flat base on a foot ring, and tall splayed neck. It has a burnished surface and is red in colour. The shape, and especially the flat base, distinguish it from the other pottery finds. The colour too is brighter - more brick red in colour - whereas the other sherd of red burnished ware was a more pinky red. It is tentatively suggested that the vessel is in fact wheel made. It is therefore best not to include it in any discussion of the early bronze age pottery from Mesas.

Esteve Guerrero illustrates coarse plain wares (Esteve Guerrero 1945, Pl.IX, Fig.1) which he also considers to be early bronze age in date. From the illustration, it is obvious that most have distinct necks or everted rims and some are decorated by very close and finely engraved lines which may have been done with a comb. This technique is known in the iron age pottery in the Peninsula and it is possible that some at least of these sherds are later in date.

Two sherds of painted pottery are known from this site. The paste and firing are good and the grit is fine. The pottery has a brownish coloured burnished surface, and the painting is in red. In one sherd the pattern seems to be divided into panels separated by vertical bundles of four lines. Within the panels, the space is filled by two bundles of three lines placed diagonally, from the edge of which hangs a short fringe. The other sherd seems to consist of a wide band of zigzag, the band being filled with obliquely placed strokes (Esteve Guerrero 1945, Pl.X).

The most interesting pottery from Mesas is undoubtedly the pattern-burnished ware.

This is a technique which is distinct from the stroke-burnishing which has been referred to in connection with Vila Nova de S. Pedro. In pattern-burnished pottery the surface was probably first slipped (because burnish always takes better on slip), then certain areas of the pot were more highly burnished than others in order to produce a definite pattern. When fired, the areas with different degrees of burnishing show nuances of colour which closely resemble painting.

About twenty sherds have been found (Pl.26 also Esteve Guerrero 1945, Pl.VIII). Fabric and firing are again good and the grit is fine. The shape is less easy to determine as the sherds are small, but one sherd belongs to an apparently upright vessel, which has a short everted rim, and the curve on the other vessels indicates that the pattern may have occurred on the inside of the bowl. The colour is predominantly reddish brown, but there are at least two sherds of grey coloured ware. This difference in colour must be due to firing rather than to any deliberate attempt to vary the colour. Motifs seem to be mainly panels of elongated cross-hatching. Panels of burnished oblique lines do occur and, in one interesting instance, there are bundles of oblique lines intersecting each other, almost as in a plaited mat. This part of the design is bordered by a narrow band which contains burnished dots (Pl.26, row D, No.5).

The significance of the finds of beaker ware will be discussed in the section dealing with beakers. Here it is sufficient to notice that beaker ware does occur (Esteve Guerrero 1945, Pl.X and 1950 Pl.V) /

Pl.V) and that none of it can be classified as maritime beaker. In fact, the chief beaker pottery forms represented at this site seem to be the bowls.

c. Discussion

There is no mention of any stratigraphical distinction between the beaker and the various burnished wares in the excavation reports. On the other hand, little or no stratigraphical distinction seems to have existed between this level and the later levels, so it is impossible to state definitely whether the beaker was, or was not, found in direct association with the other group of pottery.

Later it will be shown that the pattern and simple burnished wares can be paralleled in the east Mediterranean and that Mesas must be one of the colonies established by people from that area (see p.247ff). On the basis of this relationship, it can be suggested that, at Mesas de Asta, the beaker ware is in fact later than the burnished pottery since, at both Los Millares and Vila Nova de S. Pedro, the beakers were later than the colonial phase. The alternative to this is that both pottery types are contemporary at Mesas, which would push the date for the original development of beakers back into the 'colonial' period and, because of the fact that at Los Millares and Vila Nova de S. Pedro beakers are later than this, it would mean that beakers must have originated in this part of the Guadalquivir valley. This alternative is probably the least likely in the light of present evidence.

Los Millares, Vila Nova de S. Pedro and Mesas de Asta are the three principal sites of the period, but it is now necessary to consider the other areas of the Peninsula with a view to discovering which /

which sites may be similar to these three or have been in close contact with them, or which must be regarded as being due entirely to the activity of the local, indigenous, neolithic population.

E. THE TAGUS AREA

a. The sites and their finds

It is necessary to begin with a brief discussion of finds from relevant sites in the area, which may be done either geographically or by a consideration of the type of site involved. It will probably be less confusing if a survey is made, first of the settlement sites, then of the collective tomb sites, and finally of other sites with relevant finds.

Castro de Chibannes, near Palmela.

This site was examined by Marques da Costa at the beginning of this century. He believed it to have been a defended settlement site (Marques da Costa, 1906, p.40ff). Finds from this site are very mixed:

Pottery: two sherds of bowls with grooves below the rims. They are probably imitation imported ware. Abundant beaker and grooved ware, as well as plain ware with incised rims, was also found. There were also several clay plaques, frequently decorated.

Stone: a few crude stone axes, usually with oval cross section.

Flint: twenty-two asymmetrical trapezes, of which eight have a nick in the base. The rest of the arrowheads (33), are simpler hollow-base types, but one may be a crude mitre form. A few bifacially worked flakes of the type found at Vila Nova de S. Pedro, flint blades, and a small flint saw.

Bone: /

Bone: two spatula ended pins. One pin has incisions along the edge of the broad end and a design of two concentric circles on both sides. A Vila Novan bone cylinder.

Metal: an axe; a curved knife; two Palmela points; awls; a knife, etc.

Rotura, near Setubal.

This site, which occupies the eastern end of an escarpment, which is an outlier of the Serra de San Luiz, has been examined by several people including Carlos Ribeiro Leite de Vasconcellos, Apollinario and Marques da Costa, and appears to be a defended settlement site (Marques da Costa, 1903).

Pottery: plain ware; beaker ware; grooved ware, etc.; clay plaques.

Stone: axes.

Flint: hollow and straight base arrowheads; bifacially worked flakes.

Bone: haft and pin of the spatula ended type.

Metal: an axe, a saw; a knife; and two small axes from a nearby rock shelter.

Penha Verde (Sintra).

This site, recently examined by Veiga Ferreira and Zbysweski, was found to consist of circular stone-built huts and silos (Veiga Ferreira and Zbysweski 1958). These were at first thought to be graves, but were later identified as houses. The huts are on top of a steep-sided rocky hill, part of the Serra of Sintra.

Pottery: beaker and incised ware.

Stone: /

Stone: flint hollow-base and leaf-shaped arrowheads, blades, flint bifacial flakes.

Bone: spatula ended bone pin; a phalange.

Metal: copper knives and saws; gold; a nail-headed pin and a biconical bead.

Olellas (near Almargem do Bispo, Sintra).

This is an interesting site, recently investigated by Prescottt Vincente and Cunha Serrao. Two curious stone-built, circular houses or tombs were found.

Pottery: impressed ware; beaker ware; grooved and incised ware.

Stone: axes and adzes, votive mattock, a zoomorphic stone vase with a hollowed-out back.

Flint: hollow-base arrowheads; blades; worked flakes.

Bone: vase-headed pin; a phalange decorated by the eye motif; v-perforated tortuga buttons; bone points.

Espargueira - Carenque - Belas, c.15 km. north-west of Lisbon.

This site was excavated by Heleno and no information is available about it except that it lies near the famous rock cut tombs of Carenque. The finds were studied in Etnol. Museum.

Pottery: plain with incised rims, and beaker.

Stone: a tiny polished axe in multi-coloured stone, white, red, and black, a fossil encrinite stem.

Flint: thirty-three arrowheads, consisting of twenty-three hollow base, two straight base, one mitre type, two with rudimentary tanges, and five leaf-shaped blades; borers.

Bone: /

Bone: needles, points, comb, a segmented bone tube.

From the region around Carenque comes impressed pottery, a sherd with lugs below the rim, stone axes, and cylindrical lumps of clay idols(?).

Licea (Barcarena - c.13 km. W.N.W. of Lisbon).

Ribeiro, who investigated the site, believed it to be defended by ditches ('campo entrincheirado'). The site itself occupies high ground between two rivers and is almost a promontory site (Ribeiro, 1878).

Pottery: plain ware, usually hemi-spherical bowls; one sherd with incised rim; one possible sherd of imitation imported ware; beaker ware; grooved ware; clay plaque.

Stone: axes and chisels; stone cylinder idol; barrel-shaped green bead; fifteen stone balls.

Flint: blades; borers; scrapers; eight arrowheads (four hollow base; two leaf shaped; one with a straight base and one a mitre type).

Bone: points; spatulae; cylinder with grooved neck.

Parede, near Estoril.

This site was discovered as a result of building operations in the neighbourhood. It was excavated by do Paco, Prescottt Vincente, and Cunha Serrao. The site occupies high ground overlooking the Tagus. At present it is surrounded by new houses.

Do Paco believes that he can distinguish two levels at this site; the lower level is apparently characterised by plain pottery with incised rims: the upper by beaker ware (do Paco 1957, p.15). Only a short /

short note on this site has been published (do Paco, Cunha Serrao, and Prescottt Vincente, 1957) and the finds are locked away in the Museum at Cascais. They are known to include the following objects :-

Pottery: sherds of imitation imported pottery, with grooves below the rim and horizontal herring-bone design, a sherd from a bowl with grooves below the rim; plain pottery decorated by incisions on the rims, or by lugs placed just below the rim; beaker ware and grooved ware.

Flint: a leaf-shaped arrowhead with bi-lateral barbs made of flint.

Bone: points, grooved pinhead, and curious flat bone object which do Paco believes may be a flat idol.

Montes Claros (Lisbon)

Situated in the park of the same name in Lisbon, it was excavated by do Paco. It occupies the top of a hill with an extensive view in all directions, especially over the Tagus. Two cuttings were made, but there is no evidence that the finds from each were kept separate (Jalhay, do Paco and Ribeiro, 1945, and Jalhay and do Paco, 1948).

Pottery: impressed ware, plain ware, ware with incised rims or lugs below the rims, beaker ware.

Stone: one flint trapeze, one hollow-base and one leaf-shaped arrowhead with bilateral barbs, borers, blades.

Pedra de Ouro (Alenquer, N.N.E. of Lisbon).

This is an unpublished settlement site. It apparently occupied a good defensive position and there are remains of walls on the surface. Finds are known to include :-

Pottery: /

Pottery: imitation imported pottery; beaker and grooved ware; a cheese strainer; clay tube; footed vase; and a rough clay idol, pear-shaped, with eyes.

Stone: a large stone pine cone, fossil encrinite stems, and a small onion-shaped fossil.

Flint: hollow and straight base arrowheads, one with a deep hollow base.

Metal: copper adze, a small chisel, a dagger with a mid rib, and metal saws and awls.

Zambujal (Torres Vedras).

This is a settlement site in a good defensive position (Pl.27). Remains of an enclosure wall and a possible entrance have been found (Pl.28). The most spectacular find, however, was of a circular stone-built tower, half of which has been removed by excavation (Pl.29).

There are few finds, as the site has been little excavated (Belo 1952 and Jalhay 1946 and 1947).

Pottery: one beaker sherd, grooved ware and a small clay horn.

Stone: an axe and an adze.

Flint: thirteen arrowheads, including five hollow base, an Eiffel Tower type, a mitre type, and three with rudimentary tangs, one bifacially worked blade.

Metal: a copper chisel, and a small point.

Runa Peneda (Torres Vedras).

The settlement is again situated on a hill. The site was investigated by Belo and the finds are in his private collection at Maxial. He has published very little on this site (Belo, 1955).

Finds /

Finds are known to include :-

Flint: hollow-base and leaf-shaped arrowheads, a bifacially worked blade.

Metal: two copper axes, a chisel, fragments of a curved knife, a tanged dagger, fragments of other daggers, a tiny point.

Fornea

A similar site, excavated by Belo (Belo, 1955). Finds are known to include :-

Bone: a bone pin similar to the spatula-ended type, with the exception that it ends in two short horns, instead of the plain rounded edge.

Metal: a knife, a palmela point, awls, and scrap metal.

Outeiro de Assenta, near Obidos.

This important site, investigated in the early part of this century, has scarcely been published (Alves Pereira, 1914-15). Only a few of the finds are on show in the Ethnological Museum. They include :-

Metal: a long metal awl.

Sao Mamede (S. of Obidos).

Sao Mamede is situated on a small hill which is aligned N-S, and has good natural defences. Remains of defensive wall have been found. The date of its discovery is unknown, but it is first referred to in 1895 in O Archaeologo Portugues. Exploration of the site began in 1903, directed by Antonio de Sa, continued in 1904 and 1906 and came to an end in 1906. Little has been published on the site (Leite de Vasconcellos, 1915, p.182, Fig.V, p.361; Aberg, 1921, p.90-92).

Pottery: /

Pottery: may include imitation imported ware, and certainly includes grooved and incised wares; twenty-six complete or almost complete pots, the majority of which are simple hemispherical or globular bowls. One is a platter, one a cylindrical cup with a flat base, two bowls have a carinated shoulder, one of which has a perforated lug on the shoulder, and one is an undecorated and wide beaker form. No sherds can be definitely attributed to beaker; about fifty clay plaques, some of which are decorated.

Stone: stone axes, mainly with thick rectangular cross-sections, adzes, chisels, hammers, and querns, etc. Ten stone cylinder idols which include two with concentric curves (like Fig.4,8), one fossil encrinite stem, and a fossilised cidaris. Two decorated slate plaques.

Flint: about 320 arrowheads of which 262 were found together in a hut discovered in 1905. 229 (or 71%) of these belong to the mitre class, seventeen have straight bases, seventy-one (or 22%) have hollow bases, three have rudimentary tangs. Flint blades and some bifacially worked flakes.

Bone: a very fine groove-headed pin, a plain tube-headed pin, a spatula-ended pin. Also some which may be similar to the spindle-headed pins at Vila Nova de S. Pedro though at S. Mamede they are bigger. Bone points, spatulae, etc.

Metal: three copper axes, daggers, knives and awls, a gold diadem.

Praganca, near Cadaval, at N. end of Serra de Montejunto.

Well known for the hoard of late bronze age metal work found there /

there, this site is also of interest because of finds of early bronze age date.

The site occupies a rocky escarpment at the northern end of the Serra de Montejunto (Pl.30) and is only 30 km. west of Vila Nova de S. Pedro and less than that to the south-east of S. Mamede.

Pottery: plain, grooved and incised wares, also pottery decorated in the pointille technique, which is not beaker in shape. Ten pots, completely or almost completely preserved, six of which are hemispherical bowls, two of which are very coarse, two being oblong-shaped vessels and rather crude, and two slightly carinated bowls.

Stone: numerous adzes and axes, chisels, all rather crudely worked, six stone cylinder idols, and two bracers.

Flint: 138 arrowheads, twenty-eight with straight bases, 105 with hollow bases, and five unclassifiable. Some of the hollow bases are like rough mitre arrowheads. Flint blades and bifacially worked flakes.

Bone: pins - four vase-headed, two nail-headed, three spatula-ended, and one which has a spatula top with a concave end. Eight plain tubular heads often narrowing towards the top, a broken grooved pinhead, or segmented bead. Bone points and spatulae.

Metal: two axes and remains of others, tanged and rivetted dagger, a curved knife and saws (Fig.10, 7 and 8), praganca points (Fig.15, 1), barbed and tanged points, chisels, awls, and scrap metal.
Palmela - or Quinta do Anjo.

The four rock-cut tombs at Quinta do Anjo were first explored by Carlos Ribeiro, who did not publish anything on them. The site was also /

also explored by Antonio Mendes and Agostinho Jose da Silva in April, 1876. Cartailiac described two of the tombs and published some drawings. Estacio da Veiga described some metal objects (Estacio da Veiga, 1889, p.128). The fullest account was published by Belchoir da Cruz in 1906. The material is distributed between the Ethnological Museum and the Geological Museum in Lisbon. Some are labelled according to the tomb in which they were found and others are not. It has also been suggested that one of the publishers of the material reversed the numbering of the tombs, though this is not now easy to verify. The material will be listed, first according to the tomb in which it was reputed to have been found, and then all the finds with no indication of the tomb will be listed. There are three main sources of information which will be referred to as follows :

P = published in 1906; G.M. and E.M. - according to the labels in the Geological Museum and the Ethnological Museum.

Tomb I: Circular chamber with a circumference of 10.40 m. (the diameter must therefore be 3.31 m.), and a maximum height of 2.20 m. In the domed roof there is a large opening or clairboia. The entrance is orientated S.60 E. The porthole giving access to the chamber was 80 cm. x 70 cm. (Pl.31). When excavated, the tomb was found to be almost full of earth and stones of various sizes; before reaching ground level there was a layer of earth 30 cm. thick which contained few objects; and below this was a very rich layer containing human bones, and the following objects :-

Pottery: five beaker sherds (G.M.)
 Stone: three stone axes (P. and G.M.), $1\frac{1}{2}$ stone vessels (P.),
 eight /

eight flint flakes and two flint knives (P.), three fragments of rounded calcareous rock (P).

One cylinder idol (E.M.) but with a plano-convex section and another (E.M.) of similar shape but decorated with grooving of bundles of parallel lines running approximately across the cylinder at both ends and along it for the greater part of its length, but with a short zone which is filled with horizontal herring-bone pattern (Fig.5, 4).

A votive mattock (E.M.) with grooves marking the position of rope for hafting it. A stone plaque (G.M.) and a fragment of a slate plaque (G.M.).

Flint: eight flint flakes, two flint knives (P.), and a plain slate plaque (G.M.).

Bone: two perforated bones (P.). Bone point with trachet section edge (G.M.), bone container (G.M.), five disc-shaped, v-perforated buttons (E.M. and G.M.), two similar buttons with tiny projections at either side (E.M.) and two tortuga v-perforated buttons (G.M.), circular buttons with two perforations near the edge, made of shell (G.M.), a perforated bone disc (E.M.).

Metal: eight copper points (P.).

Tomb II: It is smaller than No.1, measures 9 m. in circumference (the diameter must therefore be 2.86 m.), and 2.00 m. at the highest point. The passage was orientated N.50 E. and measured 70 cm. in height and 65 cm. in width at the entrance. The passage and the tomb were full of earth. Small objects, such as pot sherds, bones, a copper point (which is quoted as being longer than those of tomb I and must therefore be one of the two longer points now in the Geological Museum /

Museum), and fragments of flint knives were found.

Pottery: beaker bowl (G.M.).

Stone: two stone adzes, two chisels (E.M.), a hammer stone (E.M.), a cylinder idol (E.M.), two fragments of decorated slate plaques (P. and G.M.), flint knives (P.).

Metal: copper point (P.).

Tomb III: This is one of the richest in finds. It is partially destroyed on the south side and it is not known whether or not it had a clairboia. The entrance was orientated S.40 W. There was earth in the chamber to a depth of 1.50 m. Below this was a very black layer containing animal bones and below this again, a yellow layer containing pottery and other objects. Finally, there was a shallow layer with some human bones, five small spearheads, five axes, and some beads. Everything else apparently came from the yellow layer, which was 30 c.m. thick. The finds are as follows :-

Pottery: two big and six small beaker bowls, two broken beaker bowls, one big and two small plain bowls (P.), three beakers (G.M.) and sherds of beaker ware (G.M.).

Stone: ten axes (P.), nine axes (E.M.), five fragments of cylinder idols (P.), seven cylinder idols (G.M.), two broken fragments of decorated slate plaques (P. and G.M.), a stone plaque (P.), one stone plaque (G.M.), and twenty-nine big and eighty small beads (P.).

Flint: twenty-seven arrowheads (P.), sixteen trapeze arrowheads, three of which have a nick in the base, seven hollow base, one straight base, one leaf shaped, one leaf shaped with bilateral barbs, and one with rudimentary tang (E.M.), four flint knives (P.), twelve fragments of knives (P.).

Bone: /

Bone: two worked bones (P.), bone pin with plain tube-like head (G.M.), bone cylinder with groove below the top (G.M.), three grooved pin heads (E.M.), bone tortuga shaped plaque with central perforation (G.M.).

Metal: two copper awls.

Tomb IV: This was much destroyed. It was the smallest of the group, measuring c.9 m. in circumference (the diameter must therefore be 2.86 m.) and 1.56 m. in height. It is orientated S.40 E. The entrance is 60 cm. wide, and 65 cm. high.

Pottery: one beaker bowl, one very fine bowl with erect sides and lightly rounded base, the outside of the vessel being decorated by fine, cross-hatched grooves (G.M.).

Stone: one axe (P.), fifteen axes and adzes (G.M.), a large stone pendant (G.M.), stone vessel (G.M.), $1\frac{1}{2}$ slate plaques (P.), one decorated slate plaque (G.M.), broken stone plaque (P.), biconical beads (G.M.).

Flint: flint arrowheads and knives (P.).

Bone: bone points (P.), two bone points (G.M.), two bone containers, one quite plain, the other with a groove below the rim (G.M.), grooved bone pinhead (G.M.), plain tubular pinhead (G.M.), two v-perforated conical shaped buttons (G.M.), five v-perforated tortuga buttons (G.M.).

Metal: copper points.

Other finds :-

Pottery: eleven beakers and bowls, and innumerable sherds, fourteen undecorated bowls, including nine hemispherical or globular vessels /

vessels, and three carinated bowls; a fine almost complete vessel of imitation, or perhaps true, imported pottery (Fig.3, 3). It is a cylindrical vessel with very slightly rounded base, slightly concave sides, and five regular grooves above the base and below the rim; a pot of fine ware with flat base and erect sides, inclining slightly outwards towards the mouth. Decoration in this vessel is by grooving and clearly represents the eye motif as there are seven concentric wavy lines - unfortunately the part where the eyes should be is missing.

Stone: a stone phallus, six axes and ten adzes.

Flint: seventy-four arrowheads, of which thirty-eight are hollow base and two with fairly deep bases, eight are straight based, twelve have rudimentary tangs, six are leaf shaped, and ten are leaf shaped with bilateral barbs; flint blades (over fifty-eight); a small oblong plaque perforated at either end; a small greenstone axe pendant; a segmented bead of greenstone; seven decorated schist plaques.

Metal: ten metal points (nine of which must belong to tombs 1 and 2), four awls (two of which must come from tomb 3).

Alapraia (near S. Joao de Estoril).

Four rock-cut tombs are known from this site. The first one, tomb I, was discovered in 1889 by Paula e Oliveira; tomb II was first discovered in 1932 and excavated in 1934/35; tomb III, found in 1935, was excavated in 1942; and tomb IV was discovered and excavated in 1943 (Jalhay and do Paco 1941 and do Paco 1955). The two most important articles on the site are by Jalhay and do Paco in 1941 and by /

by do Paco in 1955. They contain a complete bibliography of the site - which consists mainly of minor articles published in local journals.

Tomb I: This had been used as a pig sty and later for storing wood. There were no finds.

Tomb III: This is situated partly below a house. The only pre-historic object found was a stone cylinder idol.

Tomb II: It was discovered as a result of road works. It has a circular chamber with a diameter of about 4.20 m. and a passage about 4.70 m. in length. It is narrow at the entrance (about 0.40 m.) and again at the chamber entrance, 0.80 m., but widens out to a maximum of c.1.90 m. between the two. The maximum height of the chamber appears to have been 2.20 m. There was a clairboia (do Paco 1955, Fig.59). There was a trench a few centimeters deep running round the inside wall of the chamber. The grave was rich in finds, particularly in bell-beaker, but, for some obscure reason, no complete inventory of the grave goods has been published. The finds listed by do Paco in 1955 are quite incomplete when checked against the results published in 1941 (p.113). There is no plan showing the position of the grave goods. A comparison of the lists published in 1941 and 1955 indicates that the following must be included in the grave goods :-

Pottery: do Paco calculates that there are remains of thirty-seven different pots, of which at least eleven are plain and at least two decorated by stroke burnishing (1955, Fig.17 and 18) and are probably imitation imported ware rather than pure imported ware. The rest are beakers.

Stone: /

Stone: ten fragments of stone axes (broken intentionally?), rolled pebbles, fragments of a quern, two decorated slate plaques, twelve cylinder idols, one lunula, a pair of stone sandals, beads.

Flint: arrowheads, two trapezes, three hollow-base, five leaf-shaped, six leaf-shaped with bilateral barbs, and two with rudimentary tangs, flint blades and three nuclei.

Bone: grooved pin heads, spatulae, bone container.

Metal: none.

With regard to the position of the finds, it was possible to elicit the following information from do Paco.

The lunula was found in the middle of the chamber, the sandals about 50 cm. apart in the south-west side of the chamber near the entrance. Cylinder idols appear to have been found in the passage, and on the north-east side of the chamber. The fragments of imitation imported ware were found in the passage. Beaker ware was found in both the chamber and the passage, but it may not be insignificant that the maritime beaker was, according to do Paco, found at about 20 cm. directly above the lunula. The position of these objects is not altogether easy to explain, unless the finds from the passage were deposited as offerings, or were dropped if, and when, the chamber was cleaned out. The fact that imitation imported ware was found there indicates that the dating of the objects found in the passage need not be late (i.e. they need not be among the last objects deposited in the tomb).

The skulls and bones of over eighty people were found in the chamber, mainly along the sides in the shallow trench.

Tomb IV: /

Tomb IV: This tomb contained a less varied but still interesting series of finds. The circular chamber measures about 4.40 m. in diameter, and its maximum height is 2.10 m. The passage is about 7.60 m. long. It is narrow at the entrance - about 0.80 m. - and continues at this width for about 3 m., where it broadens out gradually to a maximum of 2.00 m. and then narrows suddenly at the entrance to the chamber to 0.80 m. There is a clairboia (do Paco 1955, Fig.61). The finds are listed by do Paco in 1955 (p.37) and are as follows :-

Pottery: twenty-three vessels of beaker ware.

Stone: four cylinder idols, one object shaped like a pine cone, beads, and rock crystal nucleus.

Flint: arrowheads, one trapeze and two leaf-shaped, fragments of flint knives and scrapers.

Metal: none.

Sao Pedro de Estoril (Estoril).

The tombs, two in number, at S. Pedro de Estoril, were discovered in 1944 by Dr. Lionel Ribeiro. Unfortunately, the site has never been fully published. Jalhay published a brief note in 'Ampurias' (1947-48), Nunes published a couple of beakers from it in 1947 (Nunes 1948), and some photos showing the finds were published in 'Alapraia e S. Pedro' (Junta de Turismo de Cascais, 2nd ed. 1946 - no author). Though the finds are on display in the Museum in Cascais, no attempt has been made to separate the finds from the two graves. Thus it must be remembered that the list below covers finds from two rock-cut tombs.

Pottery: /

Pottery: four hemispherical bowls with parallel grooves below the rim, possibly imitation import ware; some small coarse pots, one with perforated lugs for suspension; a dice box, and carinated bowls, and one similar to an amphora; one footed beaker bowl, and over six pots of beaker ware.

Stone: three stone axes or adzes, about six cylinder idols, two bracers (each with two perforations), stone beads.

Flint: flint blades.

Bone: awl, pin with plain tubular head, cylinder with groove below the neck, a flat plaque engraved with criss-cross ornament, twenty v-perforated buttons, of which six are conical, one is diamond-shaped, and the remainder are various types of tortuga button.

Metal: two tanged daggers, which Sangmeister classifies as beaker reflux types, spiral gold finger rings.

Carenque (Belas, c.15 km. north-west of Lisbon).

The four rock-cut tombs at Carenque, which were discovered in 1932, and excavated soon afterwards, are still largely unpublished. According to the brief note published by Heleno in 1933, the following were the finds :-

Pottery: plain and decorated (i.e. beaker ware) hemispherical bowls were dominant in tomb II. Biconical suspension vases were also found. Finds in the museum include imitation imported ware, plain ware, plain ware with incisions along the rim, or nipples below the rim.

Stone: three stone axes, two votive mattocks, eight slate plaques, ten cylinder idols, and other cylinders with plano-convex cross /

cross section, some apparently decorated, four stone lunulae, a stone object shaped like a pine cone, another horn-shaped object but with tooth-like projections along one side, small pendants shaped like rabbits, and beads of greenstone.

Flint: arrowheads with straight and concave bases, flint blades, bifacially-worked flint flakes.

Bone: decorated phalanges, pine.

Metal: an awl.

Emegeira (near Maxial, north-west of Torres Vedras).

The finds from this site, discovered in 1939, have scarcely been published (Jalhay and do Paco 1941, and Heleno 1943). No finds which can be attributed to the V.N.S.P. I phase have so far been published.

Quinta das Lapas (Monte Redondo, north-west of Torres Vedras).

Unfortunately unpublished.

Metal: it is known to have contained at least three amorphous pieces of metal.

Folha de Barradas (6 km. N.N.E. of Sintra).

This rock-cut tomb has a circular chamber measuring 4.00 m. in diameter. The passage appears to have been about 15.00 m. long. It is fairly wide at the entrance, narrows suddenly at about 8.00 m., broadens slightly, and then narrows finally before entering the chamber (Ribeiro 1878, p.78-86). Finds include the following :-

Pottery: eighteen complete, or almost complete, pots, of which eleven are hemispherical or globular in shape, three are carinated, one is biconical, and three have flat bases, of which one has inclined sides, one has erect sides with a broad flat rim.

Stone: /

Stone: two cylinder idols, and another cylinder idol with plano-convex cross section, and decorated by grooves and plastic ornament (Ribeiro 1878, Fig.87 and 88), a stone plaque with an arched profile, decorated on the upper side with grooves running along the plaque (Fig.5,3), decorated slate plaque, pebbles and rolled stones.

Flint: arrowhead with rudimentary tang, flint daggers, blades.
Monge (Serra de Sintra).

This is a corbel-vaulted passage grave which is largely unpublished (Aberg, 1921, p.70). The finds are in the Geological Museum in Lisbon and are known to include the following :-

Pottery: imitation imported ware, and beaker ware.

Stone and Flint: flint blades and bifacially worked flakes.

S. Martinho de Sintra.

Two corbelled tombs situated in the valley of Sao Martinho, about 2 km. north-east of Sintra. The tomb, B, is the larger of the two, and contained the richer grave goods (Pl.32). It lies to the north of A (M. Apollinario, 1896, p.210, Aberg, p.101). The finds are in the Ethnological Museum, with no indication as to their respective graves.

Finds from A (from publ.) :-

Pottery: grooved ware, bell beaker.

Stone: diorite axe, hammer, small flint blade, and a hollow-base arrowhead.

Finds from B :-

Stone: stone bowl, with grooves below the rim (rather like imitation /

imitation imported ware), a stone ball with a small dent in one side (Fig.8, 2), cylinder idols, a decorated cylinder idol with plano-convex section (Fig.8, 1), stone mattock (Fig.7, 2), a plain and a decorated stone object resembling a pine cone (Fig.4, 9), a hammer.

Flint: blade and fragments.

Bone: a bone container, Vila Novan cylinders, a decorated phalange idol.

Other finds from this site in the Ethnological Museum are :-

A bone container decorated by zigzag and criss-cross grooved ornament, a v-perforated tortuga button and Vila Novan bone cylinders, but it should be noted that the museum numbers of these objects are not the same as the numbers on the other S. Martinho finds.

Metal: two Palmela points and a tanged dagger.

Agualva (Cacem, north-west of Lisbon).

This corbelled tomb has an elliptical chamber measuring 3.00 x 2.50 m. in diameter. The passage is 2.50 m. long and 0.90 - 1.10 m. broad and was orientated N.W. - S.E. (Veiga Ferreira, 1953).

Pottery: sherds of plain pottery, sherds of imitation, imported pottery and beaker ware.

Stone: sixteen cylinder idols, one of which is decorated by eyes and concentric curved lines, stone beads, including thirteen callais or greenstone beads, some of which are barrel-shaped, a thin stone plaque, lightly arched.

Flint: a hollow-base arrowhead, four bifacially worked flint flakes, scrapers.

Bone: three bone cylinders, one of which is of the Vila Novan type /

type, bone hafts or handles, fragment of a bone container (plain), a v-perforated bone button, oval in shape with a small projection at either side, and fragments of boar's tusks.

Dolmen of Monte Abraao (Belas c.15 km. north-west of Lisbon).

This dolmen has a polygonal chamber 3.60 m. in diameter, and a passage 8.00 m. long and 2.00 m. wide. The chamber is formed of eight large, stone blocks. The burials are mainly on the south side of the chamber and passage (Ribeiro 1880, p.3-61).

Pottery: a sherd of imitation imported ware; sherds of plain ware, mostly bowl-shaped, but there is also a sort of narrow cylindrical cup, a sherd of beaker ware.

Stone: four stone axes, five cylinder idols with circular sections and seven with plano-convex sections, two of which are decorated by bundles of horizontal lines, two schist plaques, stone beads and small axe pendants.

Flint: 120 arrowheads, of which there are seventy-five in the Geological Museum; of these, twelve are hollow-base, about twenty-five have rudimentary tangs, about ten are leaf-shaped with bilateral barbs, and the remainder are leaf-shaped, three flint knives, two quartz knives, flint scrapers, bifacially worked flint flakes, and daggers.

Bone: a Cascais type bone container and two plain, bone containers, a grooved pin head, a flat idol, a v-perforated conical button, and a bone acorn (Fig.9, 12).

Dolmen of Pedra dos Mouros, Belas.

This dolmen is largely destroyed (Pl.33). The finds were as follows /

follows (Ribeiro, 1880, p.4ff) :-

Pottery: a pot.

Stone: an axe, two fragments of a lunula, a fragment of greenstone axe, pendant and stone balls.

Flint: blade, flakes, and bifacially worked flint point.

Dolmen de Estria, Belas. - (Ribeiro, 1880, p.62-67).

The chamber measures 3.60 m. in diameter, and the passage 10 m. long, being orientated towards the west.

Pottery: sherds.

Stone: cylinder idol with grooves at either end, a decorated votive croisier of slate, a lightly arched stone plaque and three perforations at one end, a fragment of a lunula.

Flint: two bifacially worked flint daggers, four arrowheads, all of which have hollow bases.

Anta de Belas.

Unpublished. Finds are in the Ethnological Museum in Lisbon.

Pottery: plain ware.

Stone: four cylinder idols, one of which is decorated by horizontal grooves placed at about 5 mm. intervals, a phallic-like stone object, two fragments of a decorated slate plaque, a disc-shaped, green bead.

Flint: a bifacially worked flint dagger, and two flint blades.

Bone: a bone container, decorated by two series of horizontal zigzag pattern, which forms a double diamond pattern at the junction of the two series.

Samarra /

Samarra (south of Acafora, on the west coast of Portugal, near Sintra).

The site was discovered when dynamite was used to clear some stones when workmen were constructing a house. Camarate Franca thinks that the type of structure represented at this site was a tholos. The grave goods were mixed, but very rich (Camarate Franca and Veiga Ferreira, 1958). There were over 130 burials in this grave.

Pottery: all plain, except for one sherd belonging to a cylindrical pot with lightly rounded base and with four grooves below the rim (op. cit. Fig. 5). This is either imported or imitation, imported ware.

Stone: a stone axe, three cylinder idols, one decorated by grooves running the length of the cylinder and a band of grooves running across the cylinder at one end, and another decorated by two pairs of curved lines, a votive mattock, stone beads.

Flint: two tanged arrowheads, up to nineteen blades, flakes, and a sickle, a mattock, stone beads.

Bone: bone container, like the L.M. 5 type, but with grooves around the base (op. cit. Pl.VII, Fig.20), four Vila Novan bone cylinders, a small, polished cylinder, a bone comb with a serrated edge and incisions down the haft (op. cit. Pl.VIII, Fig.23), a flat bone idol (op. cit. Pl.VII, Fig.16), a pin with plain tubular head, bone points, bone handles or hafts.

Metal: none.

Serra das Mutelas /

Serra das Mutelas (south-west corner of Fregesia of Freiria, Torres Vedras).

This 'tholos' was discovered by workmen in 1912. Correa and Leite de Vasconcellas, who visited the site, were given the following finds (Correa, 1914, p.264) :-

Pottery: two undecorated semispherical bowls, sherds, and a beaker.

Stone: seven cylinder idols (there are eleven in the Ethnological Museum, two of which are decorated by concentric curved lines), a flint dagger.

Metal: three Palmela points.

Finds in the Ethnological Museum, labelled as coming from this grave include a fossil encrinite stem, a stone pine cone like object, a rough axe, and a Vila Novan bone cylinder.

Arruda (Fregesia of Freiria, Torres Vedras).

The site of these two monuments is not very far from the Serra das Mutelas' tomb. The first Arruda grave was discovered in January, 1933. The second, which is a corbelled grave, was discovered in June, 1948, but was destroyed by workmen who thought they would find treasure in it. (Trinidade and Veiga Ferreira, 1956a. and Veiga Ferreira and Trinidade, 1956b).

Grave I: This is cut into the hillside and contained over forty-one burials. Finds were as follows (op. cit. 1956, p.11-12) :-

Stone: stone axes, decorated slate plaques, cylinder idols all with plano-convex cross section and one possible phallus, more than 680 beads, six flat figurines probably representing rabbits.

Flint: /

Flint: blades and arrowheads (one trapeze and twenty leaf-shaped, or with rudimentary tang), fragments of daggers.

Bone: bone pinhead with plain tubular head, bone spatulae, bone pendant, teeth, tusks, also a heavy bone cylinder idol with a rather flattened cross section.

Grave II: (For a full inventory see *Trinidade and Veiga Ferreira*, 1956a, p.12-13.) This grave contained over forty burials.

Pottery: plain pottery, a few sherds of beaker and imitation imported pottery.

Stone: stone axes, seven cylinder idols, some of which have a plano-convex section, a crude pine cone shaped object, a flattened horn-shaped object with at least five grooves around it at c. 2 c.m. intervals, the end terminating in a truncated conical shape (Fig.4,11), a lunula decorated by engraved lines (Fig.6, 2), and fragments of another, a stone plaque also decorated and with two perforations at one end (Fig.6, 1), a slate plaque, beads, including callais, etc.

Flint: five arrowheads, one of which has a hollow base, two are leaf-shaped with bilateral barbs, and one has a rudimentary tang. The fifth is broken; flint dagger, flint blades.

Bone: two Cascais type bone containers, a Vila Novan cylinder, a plaque, a v-perforated button, oval in shape with a tiny projection at each end.

Barro (Torres Vedras).

The famous tholos of Barro occupies a hilltop outside the town of Torres Vedras. Excavated at the end of the last century by a priest from a nearby institution, it has not yet been published.

The /

The finds are in the Ethnological Museum.

Pottery: beaker ware, and sherds of plain pottery with incised rims.

Stone: five stone cylinder idols, one of which is decorated by two pairs of curved lines, a crude stone object resembling a pine cone, a sub-rectangular stone vessel decorated by cross-hatched grooves, a fossil encrinite stem, big green beads.

Flint: five arrowheads, of which one is an Eiffel Tower type, and another is a mitre type, the other two being hollow-base types, a flint blade.

Bone: remains of a Cascais type bone container, a Vila Novan bone cylinder, and a plain bone cylinder.

Metal: a tanged dagger, a chisel, and two bronze rings.

The caves or Grutas do Poco Velho, Cascais.

These famous caves, now almost completely destroyed, are situated in the town of Cascais, near the sea front. They were excavated in March and April of 1879 by Ribeiro. Although the site has been known for many years, and various references have been made to it in archaeological literature (do Paco, 1942, p.1-16), there has been no complete publication of the finds, and though do Paco has published the Poco Velho finds, which are in the Geological Museum in Lisbon, many still lie unpublished in the Museum in Cascais. There appear to have been three caves, all of which were used for burial purposes. The finds are rich and varied and include the following :-

Pottery: a sherd of imitation, imported pottery, a sherd of pottery with incisions along the rim, about eighteen complete vessels of /

of which twelve are semispherical bowls, two are bowls with flatter bases and steeper sides, one is a globular pot with a short, erect rim, one is carinated, and two are amphora-shaped (like the impressed ware amphora) but undecorated, other pottery sherds are decorated by grooving, also several sherds of beaker.

Stone: more than seventy axes were found in the three caves, the majority of which are probably adzes - they mostly have a sub-rectangular section and are well made, a stone plaque perforated at one end (a palette?), a simple stone bowl, a stone ball, a flat horn-shaped object with a small projection at the narrow end, a decorated votive mattock, over twenty cylinder idols, some decorated by concentric curved grooves, a fragment of a lunula, fragments of at least five decorated slate plaques, stone pendants, and numerous beads, including callais beads. In Cascais Museum there is also a stone pine cone decorated by cross-hatched grooves, a cylinder idol with plano-convex section decorated by horizontal grooves, a fossil encrinite stem, and also some small flat stone animal figurines, which closely resemble rabbits.

Flint: there are at least twenty-six arrowheads, eleven of which are trapezes, six are leaf-shaped with bilateral barbs, three are hollow-based, one is tanged, and the remaining five have rudimentary tangs, flint blades (common), bifacially worked flakes and daggers (there are at least ten).

Bone: awls, handles, points, spatulae, a bone plaque perforated at each end, a groove-headed pin, two bone containers with grooves below the rim which have been called Cascais bone containers, at /

at least six Vila Nova bone cylinders.

Metal: two tanged daggers.

There are also finds of later date - Roman and Visigothic.

Cova da Moura, Torres Vedras.

This cave, situated half-way up a steep hillside overlooking the railway line between Lisbon and Torres Vedras, was excavated by Belo about twenty years ago. The finds lie unpublished in the Museum in Torres Vedras.

Pottery: there is a very varied selection of pottery. Eight bowls were completely preserved and these include three plain hemispherical bowls and a cylindrical flat bottomed dice-cup, two beaker bowls, and two carinated beakers. Among the sherds, of which there are more than twenty, there is a sherd of imitation imported ware, two sherds decorated by incisions along the rim, a few sherds of impressed ware, including a decorated strap handle, beaker sherds, and sherds with more complex patterns, which are mainly incised - in chequer, beaded, or cross-hatched patterns.

Stone: axes and adzes are common, two broken cylinder idols, a stone pine cone, a stone object about 26 cm. long and shaped like a cricket bat, but thicker in proportion. It is decorated by six grooves across the base of the 'bat' (Fig.7, 1). Large pendants, including one decorated in a style similar to the slate plaques, small rabbit-shaped pendants (Fig.4, 5), at least one pendant in green stone, beads both disc-shaped and biconical.

Flint: sixty-three flint arrowheads, of which sixteen are trapezes, two are hollow-based, four are tanged, three have rudimentary /

rudimentary tangs, and of the remainder, eleven are leaf-shaped, and twenty-three are leaf-shaped with bilateral barbs; c. 112 flint blades, bifacially worked flint flakes, and daggers.

Bone: five groove-headed pins, a fragment of a Cascais bone container, bone points, bone handles, and teeth.

Metal: a Palmela point, a barbed and a tanged point, and two awls.

Casa da Moura (Cesareda, Obidos).

This locality lies to the north-west of the Serra de Montejunto and the cave is situated in a limestone escarpment near the village of the Serra de El-Rei. There were two levels in the cave, the lower of which was paleolithic and the upper eneolithic. The eneolithic level contained many human bones dispersed throughout the cave in a disorderly manner, and certain bones, such as the upper mandible, ribs, vertebrae, finger and toe bones, were less common than long bones. Delgado records that many bones were split longitudinally and that they belonged mainly to young people and some even to children (Delgado, 1867, p.19-109). There is no published description of the finds, but they are available for study in the Geological Museum in Lisbon. The finds are remarkably rich and varied and some have already been discussed under impressed ware.

Pottery: only three vessels were completely preserved, two are small plain ware cups, and the third is a carinated bowl with a lug on the shoulder. There are numerous sherds of decorated pottery, including impressed ware (see p. 31) decorated with the Boquique technique, and grooving, alone, or together with bundles of parallel lines /

lines which may have been made with a comb. They may be straight or curved. Both techniques are known from Iron Age pottery (see p.151). Thus it is extremely difficult to date this pottery accurately.

Stone: twenty-one adzes, axes, about five cylinder idols, about five cylinder idols with plano-convex section, several stone balls, a flat horn-shaped object with a small projection at one end, a small stone plaque with three perforations along one end; remains of twenty-three decorated slate plaques, a fine decorated slate croisier, small axe pendants, frequently of green stone, barrel-shaped beads, sometimes in greenstone, a stone plaque fragment, which may have been part of a bracer.

Flint: 193 arrowheads, of which twenty-seven are trapezes, seven are hollow-based, five are of the mitre type, twenty-one are tanged, about twelve have rudimentary tangs, about thirty are leaf-shaped with bilateral barbs, and the rest are leaf-shaped. 102 flint blades, seven nuclei, three of which are of quartz, one flint saw, four bifacially worked flint 'daggers' and five large flint 'daggers', beautifully shaped and worked round the edges, the central part on both sides being, however, flat and smooth (Fig.8, 1). One of the latter seems to have had nicks at either side of the heel.

Bone: points, three pins with long shafts and tubular heads, and one with a grooved head; another bone tube has grooves at widely spaced intervals; another pin has a flat square-shaped head, two v-perforated tortuga buttons; teeth, beads, etc.

Metal: a small awl in the shape of an elongated diamond.

Gruta de Carvalho (Turquel, north-east of Obidos).

The finds from this unpublished grave are in the Geological Museum in Lisbon.

Pottery: remains of plain ware vessels, nineteen of which are hemispherical bowls, one is shaped like the cylindrical imported cups from the Vila Nova de S. Pedro, and nine others are somewhat similar, but have more rounded bases, two have flatter bases (one of these has outwardly sloped sides) one sherd has a marked inturned rim, and two others have markedly everted rims. Decorated sherds include impressed ware (see p. 30), and ware which may be Iron Age (cf. Casa da Moura), and sherds of a carinated beaker decorated by lozenge motifs.

Stone: two adzes, six axes, a cylinder idol, a stone vessel in the shape of an animal (cow?) with the body completely hollow (Fig.6,3), an arched stone plaque.

Flint: arrowheads - four hollow-base and one with a rudimentary tang, about fifty-five flint beads, six bifacially flaked 'daggers', one of which has nicks at the heel (Fig.8, 5), another of the Casa da Moura type is flaked only around the edge.

Bone: a fragment of a bone ring, a bone needle, and bone points.

Gruta da Amoreira (Montejunto).

(Described under Impressed ware, p. 33)

The more interesting finds are :-

Stone: a stone ball, two decorated slate plaques.

Bone: a bone container with four grooves below the rim and panels of cross-hatched ornament separated by bundles of vertical grooved lines.

Cylinder /

Cylinder idols are also known from the caves of Curral das Cabras Gafas, Gruta das Lapas and Columbeira, all in the Montejunto area.

b. Discussion

There can be no doubt that Vila Nova de S. Pedro stands out in many ways from the other sites around the Tagus mouth, not only in the richness of the finds, but also in the presence there of special types of objects.

At Vila Nova de S. Pedro and Los Millares, it was found possible to distinguish certain objects which were characteristic of the early phase at either or both of these sites. These included painted or stroke burnished pottery, stone vessels, bone containers, certain types of arrowhead, bifacially worked flint 'daggers', ritual objects such as cylinder and round idols, and by extension of this all cult objects such as pine cones, mattocks, sandals, etc., phalange bones, various pin types, and certain metal types. Slate plaques must also be included because, according to the Leisners, they are developments from flat idols, which are characteristic of the Almeria culture.

The distribution and association of the V.N.S.P. I phase objects will now be considered in more detail under the usual sequence of pottery, stone, flint, bone, and metal.

Pottery: the very best imported ware came from Vila Nova de S. Pedro, but examples of imitation imported ware, so called because it was less well made, though the same shapes and decorative motifs were used, could be identified at at least fourteen sites. The most important of these were Palmela, Alapraia, S. Pedro de Estoril, Agualva, Monte Abraao, and Cascais.

It is unfortunate that the plain pottery, found in excavations in this region, is inadequately published.

Fragments of platters were noted at Vila Nova de S. Pedro, but it is not known if they were a popular type at other sites.

There is no known sherd of painted or pattern burnished ware from this area.

Symbol pottery is almost unknown, but there appears to be a vase of it at Palmela.

Beaker ware, which will be discussed at length below (see Ch. III), is found at the majority of sites in this area. It is more remarkable for its absence at Runa Peneda, S. Mamede, Praganca, Folha de Barradas, Estria Belas, Pedra dos Mouros, and Casa de Moura, than its presence at all the other sites.

Grooved ware, so called because the decoration is by means of deep grooves, is found at several sites in the area: Chibanes, Rotura, Olellas, Licea, S. Martinho, S. Mamede, and Praganca. Another less frequent form of grooved ware - the platter - which is decorated on the inside, is known from Chibanes, Vila Nova de S. Pedro, and Monge.

This pottery exhibits remarkable uniformity, not only in form and decoration, but also in paste and texture. It is extremely difficult to date, as there appears to have been no stratigraphical observations concerning it. General opinion would probably date it to beaker times and later. Some would date it even to the late bronze age. Certainly, it is found at sites which were mostly in use until at least middle bronze age times. It is also possible to query /

query whether the platters and the pots were contemporary, though the decoration is similar. In September of 1957, the present writer observed that sherds in zone B which extends below the kiln at Vila Nova de S. Pedro (do Paco 1957, Fig.3) were from platters of this type. They were later confiscated and she was unable to investigate the matter further.

The paste of the platter and of the pots of this type of pottery was in some cases remarkably like that of the imported pottery from Vila Nova de S. Pedro, and in order to investigate this, eight sherds, representing all three pottery types, and four different sites, were selected for microscopic examination by Dr. Frechen (Mineralogical and Petrological Institute of Bonn University). He was able to show that the paste in all cases contained the same grit and backing material, the source of which, on account of its composition (granite, syenite and trachyte), could only be in the Cabo da Roca region near Sintra (Blance, 1959). Thus it seems likely that the clay of the Cabo da Roca region was exploited from the earliest bronze age onwards.

The present writer believes that grooved ware must, on account of its good hard pottery and uniformity of design, be contemporary with late bell beaker at the earliest and probably continues into the Argaric bronze age times.

Another type of pottery, found at settlement sites such as Vila Nova de S. Pedro, S. Mamede, and Praganca, is decorated by incisions arranged to form various patterns. This pottery, too, appears to date to the Argaric bronze age.

Stone: /

Stone: cylinder idols were particularly common in the graves and were found at twenty-five sites, the most important of which are the rock-cut tombs, and also some of the corbelled graves, dolmens, and caves. The cylinder idols are not all plain, and some have the familiar pair of concentric curves (S. Mamede, Casa da Moura, Agualva, etc.). Cylinder idols with plano-convex cross sections are very curious and are found at several sites. Many of this type of idol are decorated (see Fig.8, 1). Some are broader at one end and some have small hollows in the flat under-surface at the broader end as, for example, idols from Palmela and Arruda.

Fossil encrinite stems which were presumably regarded as cylinder idols, are known from six sites which include S. Mamede, Mutelas, and Cascais.

Bone cylinders, called Vila Novan cylinders, were found at a few sites - Chibanes, Licea, Palmela III, S. Pedro de Estoril, S. Martinho de Sintra, Agualva, Samarra, Arruda II, Barro, and Cascais. Their function is unknown but they are probably of some cult use. They may be portable cylinder idols. Plain bone or ivory cylinders were also noted at Los Millares (e.g. L.M. 40).

A pair of stone sandals was found in the second tomb at Alapraia. A similar sandal, made of ivory, is known from grave 12 at Los Millares (see p.121) and a stone one decorated by herring-bone pattern was found at Almizaraque (Jalhay and do Paco, 1941, Fig.21). An early date for the sandals is probable.

Stone lunulae, which were not found at Vila Nova de S. Pedro, were noted at six out of the thirty-eight sites referred to in the survey /

survey, and Jalhay and do Paco add a further example from Anta of Trigache (Odivelas). The presence of lunulae in these graves with early associations suggests that they must also be regarded as early. Their significance is unknown but it is interesting to note that, in early Roman times, the Serra of Sintra, around which many of these lunulae were found, was called Serra da Lua (Serra of the Moon) (op. cit. p.122-3 and Fig.17). Most of the lunulae are decorated and have two or more perforations, presumably for suspension from, or attachment to, a haft or some such thing. The presence of a lunula in the middle of the chamber of tomb II at Alapraia may be comparable to the use of slabs of schist in the Los Millares graves.

Stone pine cones, the significance of which is unknown, were found at nine of the thirty-eight sites. Some, such as the ones from Cascais and S. Martinho, are finely worked and decorated by cross-hatched grooving, but others were less well made. At Vila Nova de S. Pedro, the motif of a decorated pine cone was used as a pinhead, and a well-made undecorated stone pine was also found there.

Stone balls, also of unknown function, were found at four sites. They are well made and sometimes have a small dent in one side.

Votive mattocks, which were not found at Vila Nova de S. Pedro, were found at several other sites. Siret apparently thought that these were related to the round idol, especially to types such as the one from Los Pozicos 8 (Leisner, 1943, Pl.30, gr.2,5 and p.488). This interpretation seems rather far-fetched, and it is more probable that they are representations of hafted adzes and hence, presumably, related to some agricultural religious cult.

Only two croisiers are known from the Tagus area (Casa da Moura and Estria), but others are known from the Alentejo (Olival da Pega and Anta I do Pano, etc.). Heleno believes that they are imitations in slate of votive mattocks (Heleno 1943). It is unfortunate that he has not published the finds from which he traces this development.

Arched plaques were found at five sites. They were sometimes perforated at one end. Their function is unknown. The plaque from Arruda is decorated by a band of herring-bone across one end, from the middle of which project two motifs in low relief resembling two hafted mattocks (Fig.6, 1).

Flat horn-shaped objects were found at three sites. The finest example comes from Arruda and it has a segmented appearance and a regular, slightly oval, section (Fig.4, 11). The other two examples are flatter and cruder. The significance of these is again unknown.

These cult objects are probably to be associated with the V.N.S.P. I period because :

1. They occur consistently together with cylinder idols, which are presumed early on account of their relationship to round idols.
2. They all presume some cult activity which is more characteristic of the graves of the early phase at Los Millares than of the later beaker period; in fact, there is no indication that the beaker folk engaged in such activities.
3. They are all of carefully worked stone which is a rare feature in the beaker culture, but which is known from the V.N.S.P. I phase by the decorated stone vessels.

4. In Portugal, they are limited in distribution to an area around the Tagus mouth, where Vila Nova de S. Pedro is situated.

Except in the settlement, where they occur as stray finds, they tend to be found together. The table below (see p.194) shows their distribution and associations.

Although decorated slate plaques, which the Leisners consider to be the Portuguese dolmen equivalent of flat idols, were found at ten sites in the Tagus area (S. Mamede, Palmela, Alapraia, Carenque, Folha de Barradas, Monte Abraao, Arruda, Cascais, Casa da Moura, and Amoreira) as well as at Vila Nova de S. Pedro, they were not numerous.

Stone vessels were found at six sites (Olellas, S. Martinho, Barro, Cascais and Carvalhal). The vessels from Olellas and Carvalhal are quite unique because they are in the form of animals (Fig.6, 3). The vessels from S. Martinho and Palmela III are a simple bowl and a cup respectively, and the Cascais vessel is also a simple bowl. The vessel from Palmela IV belongs to the Alcala type. The vessel from Barro (M.G., Pl.159, 3) has no exact parallels, but the cross-hatched decoration is a common feature of the El Carlero type.

At Vila Nova de S. Pedro, three of the vases were simple undecorated bowls and a cup, but one vessel was decorated by cross-hatched ornament and had grooves below the rim, and obviously belongs to the El Carlero type. The last stone vessel from Vila Nova de S. Pedro resembles a bone container of the Cascais type as it is plain and has grooves below the rim.

Bone containers /

S I T E	O b j e c t						
	Cylinder		Plano-convex				
	Idol	Idol	Idol	Idol	Mattock	Pine Lunula	Arched plaque Ball Horn Croisier Sandal
Palmela	X		X		X		
Alapraia	X				X	X	X
Carenque	X		X		X	X	
Folha de Barradas	X		X				X
Sao Martinho	X		X		X	X	
Agualva	X						X
Estria	X				X	X	X
Samarra	X				X		
Mitelas	X					X	
Arruda	X		X		X	X	X
Barro	X				X		
Cascais	X				X	X	X
Cova Moura	X				X		
Casa da Moura	X		X			X	X
Carvalho (Turquel)	X					X	X
Pedra dos Mouros						X	

Bone containers must be considered at this stage because of their resemblance to stone vessels. They were found at eleven sites in this area. The majority are undecorated. Some are merely simple bone tubes (Agualva, Monte Abraao and Palmela, and Vila Nova de S. Pedro). More often, they belong to the Cascais type which is distinguished by grooves below the rim. These were found at Palmela IV, Monte Abraao, Arruda II, Palmela I, Barro, Cascais and Cova da Moura. Several of this type were encountered at Vila Nova de S. Pedro and they are also known from Los Millares. The decorated bone containers from Vila Nova de S. Pedro have already been described, and some belong to the L.M. 5 type. A very fine example of a bone container of this group came from Samarra. The bone containers from S. Martinho de Sintra and Anta da Belas both employ chevron motifs in their decoration, as do several from Vila Nova de S. Pedro. This motif is not found on bone containers of south-east Spain, though it is seen on a painted stone vessel from Blanquizaes (M.G., Pl.159, No.6). The custom of dividing the decoration into panels, such as was noticed on the containers from Amoreiras, S. Martinho, and Vila Nova de S. Pedro, is also unfamiliar in the south-east, while the bone container from Vila Nova de S. Pedro with the grooved circle ornament, remains quite unique in the Peninsula.

Objects of greenstone or callais, in the form of either beads or axe pendants, are known from at least nine sites in the area (Palmela, Licea, Cascais, Monte Abraao, and Agualva for the beads; Palmela, Cova and Casa da Moura, Monte Abraao, and Pedra dos Mouros for /

for the pendants). The beads are usually barrel-shaped which is a type similar to those found in the Almeria culture, but which is rare at Los Millares.

Bifacially worked flint flakes or 'daggers' were considered as belonging to the early phase at Los Millares and were also found at Vila Nova de S. Pedro. At Los Millares, they actually resembled daggers while, at Vila Nova de S. Pedro they were mostly oval in shape, and could never have been used as daggers. In fact, the gloss on some showed that they had been used as sickles. Not all the bifacially worked flakes found at the nineteen sites in the Tagus area can be regarded as sickles. Some flakes, such as the ones from Casa da Moura and Carvalhal, which are provided with notches on either side of the heel (Fig.8, 5) may, in fact, have been daggers, perhaps imitations of the metal daggers of the type found in Los Millares 57 and Alcala 3 (see p.215). Veiga Ferreira, 1957, publishes a whole series of them from the Geological Museum. The distribution map included shows that they are to be found mainly in the Tagus area (op. cit. Pl.1). Others again are large and triangular in shape with a semicircular projection on on the heel (Fig.8, 1). These are flaked only around the edge and are probably made from a tubular flint. They have been called halberds, spearheads, or daggers. Jalhay, 1947, has published several of this type and again the distribution map shows /

shows a concentration in the Tagus area (op. cit. Fig.1). The nearest parallel for the Casa da Moura type are the metal daggers of the Remedello culture, though the flint daggers of the same culture show no such resemblance to the Portuguese ones. On the basis of parallels with Los Millares, and the lack of such objects in the Beaker culture, it seems justifiable to consider that the bifacially worked flakes belong to the V.N.S.P. I phase in the Tagus area, though the possibility that some, such as the Cava da Moura examples, belong to a different and later series must not be forgotten.

The study of the arrowheads is particularly important, because arrowheads were common objects in prehistoric times and as such are found in relatively large numbers and are more liable to show changes in fashion. Thus the tanged arrowhead was the characteristic type of the Almeria culture but the deep hollow-base type was characteristic of Los Millares. At Vila Nova de S. Pedro, the characteristic type was the hollow-base. There were only two trapezes present, while leaf-shaped, leaf-shaped with bilateral barbs, and tanged arrowheads, were unknown. Tanged arrowheads were never popular in the west, and those that appear may be due to Almerian influence or penetration. In Portugal, trapezes were frequently found associated with impressed ware pottery or in dolmens and in the south-east of the Peninsula. They are attributed to the Almeria culture. The table below shows the types of arrowheads found in twenty-six /

[illegible]

six sites in the Tagus area.

This table shows the popularity of the hollow-base arrow-head, which was found at almost every site, and sites at which it was not found usually yielded only one or two arrowheads. Los Millares arrowheads, with a deep hollow base, are found at Pedra de Ouro and Vila Nova de S. Pedro.

The mitre type, which is typical of the Vila Nova de S. Pedro, was also found at six other sites - Chibannes, Casa da Moura, Espargueira, Zambujal, S. Mamede, and Licea. The find from S. Mamede is particularly important because there the mitre type formed 70% of the total number of arrowheads found.

Three sites have tanged arrowheads but a further ten have arrowheads with rudimentary tangs.

The leaf-shaped, and the leaf-shaped arrowhead with barbs, are also present, being found at twelve other sites, such as Palmela, Arruda, Monte Abraao, and Licea. Leaf-shaped arrowheads are also known from the Alentejo and leaf-shaped arrowheads, bilaterally barbed, are common in the Vila Nova de Paiva dolmens (see p.233).

Trapezes are found at seven sites, Chibannes, Palmela III, Alapraia II and IV, Arruda I, Cascais, Casa da Moura, and Cova da Moura. Their presence at the last three is not unusual, because they could easily be attributed to the earlier impressed ware neolithic levels. At sites such as Palmela III, Alapraia II and IV, and Arruda I, there is no such possibility, because these /

these graves were not built by the impressed ware peoples, nor is there any sign that they were used by them, and if they were, it would push the date for these graves right back to neolithic times. They were found too at Chibannes, a settlement site, and could be attributed to some connection with the neolithic period, but the fact that they appear in Palmela which is close by Chibannes suggests that at Chibannes too they must be assigned to this period.

There is thus a group of sites (Palmela, Alapraia, Arruda, Monte Abraao, and also three cave sites - Casa and Cova de Moura, and Cascais) characterised by the presence of arrowhead types which are not found at Vila Nova de S. Pedro. In view of the large number of arrowheads found there this difference must be significant and may be due either to chronological or cultural distinctions.

If the difference were chronological, which at first seems more plausible, it would mean that these sites could only be earlier than Vila Nova de S. Pedro, as the arrowheads are lacking at the latter site, which is known to continue through beaker times into the Argaric bronze age, and these arrowheads cannot be later than the early bronze age. The arrowheads could thus be derived from earlier Almerian influences. This would, however, push the date of the construction of these graves back into pre-L.M. I times, and thus to pre-V.N.S.P. I times, and would, in fact, equate them with the Almerian culture, which appears to have had only round graves without corbelled roofs. This chronology would be very tight, because it was features of this same Almerian culture, flat idols, etc. (see p.101), which arrived in the Alentejo and are connected with the Portuguese dolmen culture.

Besides /

Besides, these sites show good parallels with Vila Nova de S. Pedro in other aspects of the material culture, for example, the cult objects, the stone and bone vessels, or the imported pottery, and, though this could be interpreted as a later stage in the history of the tombs concerned, it more probably represents the first phase of the usage of the tombs.

Also, a few trapeze arrowheads were found at Vila Nova de S. Pedro and these are the arrowheads with the best claim to antiquity. Thus, if they survive into V.N.S.P. I times, it is quite probable that the others do too. If the distinction is cultural, it would mean that the graves were built in the time of V.N.S.P. I and probably as a result of the influence from that site, but by people whose cultural heritage was that of the local impressed ware neolithic mixed with influence from the Almeria culture.

Even this solution is not altogether satisfactory, because the rock-cut tombs and corbelled graves are something so new and so different in the area that it is easier to see them as a product of the activity of the colonists than the result of the efforts of the indigenous inhabitants with their impressed ware neolithic and Almeria culture background. Almost certainly the original impetus to construct such graves must have come from the colonists.

The use of pins is a distinctive feature of the West. In the south-east, pins are relatively rare. There is a very fine series of pins from Vila Nova de S. Pedro. The bird-headed pin is found only at Vila Nova de S. Pedro. The vase-headed pin, a common type there /

there, is also rare elsewhere and is found only at Olellas and Praganca. The nail-headed pin, considered as a probable reject from the manufacture of the vase-headed pins at Vila Nova de S. Pedro (see p.142), was only found at Praganca. The pin with the plain tubular head was the commonest of the Vila Nova de S. Pedro types and was found at S. Mamede, Praganca, Palmela, S. Pedro, Samarra, Arruda and Casa da Moura. The spatula-ended pin was also relatively common and was found at the settlement sites of Chibanes, Rotura, S. Mamede, Praganca. The groove-headed pin, the early dating of which has been discussed below (see p.99) is found at eight sites including Palmela, Alapraia, Monte Abraao, Cascais, Cova and Casa da Moura - all sites of particular interest because of their association with a special group of arrowheads.

Flat bone idols were found at Monte Abraao and Samarra, in obviously early contexts. In south-east Spain they are dated to the Almerian culture.

Bone combs, which occurred in the L.M. I phase, are known from two sites in the Tagus area, Samarra and Espagueira. At the former site, it was associated with a bone container, cylinder idols, a flat idol, and a votive mattock, all features of V.N.S.P. I. Bone combs are also known from the cave sites of Furninha and Cabeco dos Moinhos.

Phalanges, which are particularly common in the L.M. I phase, are rarely found in Portugal. This may be partly due to the fact that, in earlier excavations, their significance was not realised. They are known from Penha Verde, Carenque, Olellas and S. Martinho. The last two sites have provided examples decorated by the eye motif.

The /

The complex eye motif of south-east Spain is less common in the Tagus area, where probably only the broken vessel from Palmela indicates its presence. The decoration of the cylinder idols, though obviously derived from this motif, is not so complex. A further site in the Tagus area which yielded a phalange, decorated with this motif, was the grave of Bugalheira (Almonda) which also contained impressed ware (cf. p. 32).

Metal. At Los Millares, axes, chisels, and a certain type of dagger were attributed to the L.M. I phase. Similarly, at Vila Nova de S. Pedro, it was possible to distinguish a certain axe type, called the Tagus axe, and some chisels which could be regarded as early. Similarly axes, which are not a typical feature in graves in the Tagus area, were found at the settlements of Chibannes, Rotura, Praganca, S. Mamede and Runa Peneda. Chisels were found, but cannot be attributed with absolute certainty to this period. No daggers of undisputably early type have been found.

The Tagus axes are undoubtedly the most interesting metal find of the V.N.S.P. I period and a glance at map IX shows that there are large numbers of stray finds of axes from the Tagus region which is the region which has the strongest evidence for the V.N.S.P. I phase.

It has thus been possible to show, by parallels with Los Millares, and arguments based on associations of certain types of objects, that there is, at Vila Nova de S. Pedro, an occupation level, earlier than the bell beaker, and characterised by certain exotic objects. This level can be paralleled in the first phase at Los Millares and Mesas de Asta. Other sites in the Tagus area are also /

also known to have yielded similar or related finds, though these are not always of the same high quality as the objects from Vila Nova de S. Pedro. It is thus possible to state that the V.N.S.P. I phase is represented at several sites in the Tagus area. This facilitates a study of the relative chronology of these sites.

The V.N.S.P. I level is known to antedate the beaker culture. This is shown primarily by the position of the 'imported' pottery below the citadel walls at Vila Nova de S. Pedro, while the beaker ware was found in the upper levels at the same site, above the level of destruction. It must also be remembered that several sites with cultural assemblages comparable to V.N.S.P. I (e.g. S. Mamede, Samarra, Folha de Barradas, Pedra dos Mouros, Estria, and Belas) have not yielded any beaker ware, thus confirming the fact that the supposed typical assemblage for V.N.S.P. I is a valid one and that it is earlier than the beaker complex. The total lack of finds of the beaker complex at S. Mamede, and the almost total lack of them at Praganca, suggests that these sites were destroyed at the same time as Vila Nova de S. Pedro (i.e. at the end of the V.N.S.P. I phase) and were never used by the beaker folk as Vila Nova de S. Pedro was, but remained uninhabited until Argaric bronze age times.

Although finds of the V.N.S.P. I period are known throughout the Tagus area, it cannot be said that the area was occupied by the Vila Nova de S. Pedro 'culture' because, in fact, these finds are usually associated with objects of a more indigenous nature. A good example is provided by sites such as Palmela, Alapraia, Monte Abraao, Cascais, Casa da Moura, and, to some extent, Arruda I. These /

These are all sites which have yielded several objects which are more characteristic of the Almeria and Neolithic cultures in south-east and south-west Spain and Portugal than of the V.N.S.P. I phase. These objects are flat bone idols, trapezes, tanged arrowheads, leaf-shaped arrowheads with or without rudimentary tangs, grooved pinheads, slate plaques, and beads and pendants of greenstone. A single find of any of these objects would be of dubious significance but most of these sites contain five or six different objects (only Arruda has less than five). It will be noticed that though the sites mentioned include rock-cut tombs, dolmens and caves, none of them is a corbelled grave. All the objects mentioned above are rare at or completely absent from Vila Nova de S. Pedro, but it was suggested that this difference was cultural rather than chronological. The fact that some are found at Vila Nova de S. Pedro (trapezes, schist plaques, and greenstone) shows that V.N.S.P. I is in fact contemporary with the cultures of which these objects are typical. This suggests that the local neolithic population, descended from the impressed ware neolithic and the later Almeria culture, still inhabited the area and had good commercial relations with V.N.S.P. I. It also further strengthens any suggestion that V.N.S.P. I is a colony and not the result of the domination of the area by an invasion. The insecurity which the colonists felt is reflected in the stout defensive walls at Vila Nova de S. Pedro and also by the fact that these shown signs of having been destroyed.

The origin of the rock-cut tombs and the dolmens is less easy to trace. At Palmela and Alapraia especially there is strong evidence /

evidence for the V.N.S.P. I phase, which thus puts the date of their construction at this time, but they also exhibit strong indigenous influence. The idea of collective burial in a chamber could have arrived with the Almeria culture, but this culture can scarcely be accredited with the construction of rock-cut tombs, when in Almeria the early graves were stone built and had no roof.

The rock-cut tombs seem to be imitations of the corbelled graves and they even have a clairboia closed by a capstone as the corbelled graves do. To consider them as imitations of corbelled tombs by the indigenous inhabitants, who were used to living in caves, is also difficult to accept on the grounds that their construction would involve careful planning and craftsmanship, accomplishments which are more likely to be found in the colonists than in the indigenous inhabitants.

Finds from sites such as Alapraia II require careful consideration in order to decide whether the finds of exotic objects, such as sandals, are more significant than finds such as a few trapezes or leaf-shaped arrowheads. Normally, the latter are considered to reflect the culture of the actual users of the tomb more than the exotic features which are more likely to be imported. Another solution would be to consider that the tombs, probably originally built by the colonists, were used by both groups of peoples - colonists and the indigenous inhabitants - but this is unlikely on anthropological grounds because two different racial groups living in the same area usually retain their own burial customs. This may, however, have depended on the length of time the colonists /

colonists had been in the area and on the strength of their connections to the homeland in the eastern Mediterranean. They may have been cut off eventually from contact with the East, which could have led to more intercourse with the indigenous inhabitants. Below (see p.320), it will be suggested that it was against this background that the beaker culture arose.

The enthusiasm with which the cylinder idols - a local form of the round idols - were received into the indigenous culture of the Tagus area is astonishing. It would be interesting to know whether the stone lunulae, pine cones, horns, balls, etc., were introduced at the same time or if they represent indigenous, cult objects translated into stone when the technique of good/^{stone}working was introduced by the colonists. Admittedly there is little evidence for the use of these objects at such sites as Los Millares or in the Aegean, but the excellent craftsmanship shown in their manufacture indicates that they belong to the Vila Nova de S. Pedro cultural assemblage, rather than to the cultural assemblage of the indigenous inhabitants.

It is probable that a study of the more mundane objects, such as plain pottery, axes, adzes, and flint work, would reveal more decisive cultural traits than would an examination of other less common objects. It has already been noticed that at V.N.S.P. I flint implements are far more important than stone implements. The flint is characterised by bifacial working, and also by specific arrowhead types such as hollow-base, mitre, etc.

Another problem of interest concerns the nature of the settlement /

settlement at Vila Nova de S. Pedro, because it is so remarkably small, though this may have been an advantage from the defensive point of view. The citadel, which measures only 25.00 m. in its inner diameter, could not contain a large population. There may have been huts between the citadel and the first enclosure walls but these could have belonged to either the first or the second phase at the site. No huts have been found between the first and second enclosure walls and only a few remains of wattle and daub walls have been found. The defences are remarkably complex for a site of little importance. There are no known graves in the area, which would presumably have been necessary if there was a large population. At Los Millares, for example, there are over seventy collective tombs.

There is evidence of agriculture in finds of grains and beans at Vila Nova de S. Pedro and also in the various animal bones found there, but this may not have been on an extensive scale and may have been just sufficient to provide for the needs of the inhabitants of Vila Nova de S. Pedro. There was no room in the citadel to keep animals, but there may have been room within the first or second enclosure walls.

Although there is no evidence of a large population, vast quantities of material have been found there, particularly arrowheads, which number over 6,000. A purely agricultural community would be unlikely to use so much material ^{or} to take such defensive precautions. It must be remembered, however, that the V.N.S.P. I people brought the /

the first knowledge of metal working to the area (as the L.M. I people probably brought it to Almeria), and remains of prehistoric copper working have been found at the site. Thus it is possible that they were in search of copper ores and that they kept metal working a closely guarded secret, much as nuclear weapons are at the present day. That they did in fact keep the secret is shown by the fact that the succeeding beaker culture only had a knowledge of hammered metal working and not of casting in a closed mould.

Another interesting feature of the V.N.S.P. I phase is that it is present at S. Mamede and Praganca, and that there is a strong probability that those sites also suffered destruction when V.N.S.P. I did. Praganca lies at the north end of the Serra de Montejunto about 35 km. across country from Vila Nova de S. Pedro. From Praganca, it is possible to see Obidos on a clear day and thus it is probable that S. Mamede is also visible although it is about 35 km. away. From S. Mamede, it is only a few kilometres to the sea, possibly via Assenta, which is only 5 km. from S. Mamede. Whether the situation of these sites has any strategic significance, and is not merely due to geographical accident, it is impossible at the moment to decide.

A survey of thirty-eight sites in the area of the Tagus mouth was made with a view to investigating the possibility of distinguishing the early phase at other sites in the same area as Vila Nova de S. Pedro. The thirty-eight sites consisted of settlement sites, rock-cut tombs, corbelled graves, and dolmens. The results showed beyond doubt that the V.N.S.P. I period was represented at these sites in varying intensities. It seems probable, however, that there was a strong /

strong indigenous element in the area which was descended from the local neolithic. This is shown by the fact that arrowheads and other features which are not found at Vila Nova de S. Pedro are found in the rock-cut tombs, corbelled graves and dolmens, together with objects which are characteristic of the first period at Vila Nova de S. Pedro.

F. SOUTH PORTUGAL AND THE GUADALQUIVIR

a. The sites and their finds

Many of the sites to be mentioned in this region are fully published in Leisner. It is thus considered necessary to give only the reference to this publication for the inventory of grave goods.

Marcella (Algarve). (M.G., p.232, Pl.73, l.) A round grave.

Nora (Algarve). (M.G., p.232, Pl.73, l.) A gallery grave.

Torre dos Frades (Algarve). (M.G., p.233; Estacio da Veiga, 1891, p.111.) Two stone-built graves.

Alcala (Algarve). (M.G., p.235ff. and Pl.77-80.)

A necropolis of nine graves.

Monte Velho (Algarve). (M.G., p.243ff., Pl.81.)

Three round graves.

Aljezur (Algarve). (Estacio da Veiga, 1886, p.145-204).

Nine graves, which seem to have been in the form of silos.

Some stray finds in the Museum of Lagos and Faro are also of interest. There are two stone idols, with flat sub-rectangular sections in Lagos Museum. Both have a band of decoration about .40 mm. wide, situated near the base of the idol and on one side only, this /

this band is filled with dotted ornamentation. The back of one of the idols is decorated by a scratched design resembling half a spider's web. This idol is from Lajes, Lagos (Viana et al., 1953, p.155, Fig.11). The other idol was decorated by four groups of three lines in the shape of a V. It is from Serro da Moinho (Bensafrin) (Viana et al., 1953, p.115, Fig.10). In Faro Museum, there is an idol very similar to these two, but decorated on both sides with a band of dotted ornament. The find spot of this idol is not known (Viana et al., 1953, Pl.VI, 56-58). Another idol in Faro is round and has two eyes and two pairs of curved lines below them. It is supposed to have been found at Moncarapacho (Olhao) (Viana et al., 1953, p.117 and Pl.VI, 54).

The more important sites in south-western Spain, or the area of the Guadalquivir valley, are the following :-

La Zarcita (Huelva). (Cerdan Marques and Leisner, 1953, p. .)

A round grave.

San Bartolomeu de la Torre (Huelva). (Cerdan Marques and Leisner, 1952, p. 41.) A round grave with a side-chamber.

Cueva de la Mora, Jabugo (Huelva). Excavated by Diaz (1923, p.119-126), who found a single burial in a grave orientated north-south in this cave. The skeleton was apparently accompanied by a slate plaque which is reputed to have been attached to its neck by a string; a stone axe; sherds; and "una marmita con tapadera en forma de carrete fabricado a mano". Excavations in the rest of the cave yielded pottery, stone axes, decorated plaques, etc. Among the more interesting finds were :-

Pottery: /

Pottery: a platter; an amphora-shaped hanging bowl; impressed ware; two clay vases which obviously imitate decorated stone or bone vessels; and remains of a clay plaque.

Stone: decorated slate plaques.

Flint: a bifacially worked flake, triangular in shape, with a small projection in the base.

Bone: a bone button with a perforated ridge on the underside, similar to one found at Los Millares.

Metal: remains of a crysole with copper.

Carmona and El Acebuchal.

The region around Carmona has been thoroughly explored by George Bonsor, but he never published more than a short note on his discoveries (Bonsor, 1899). The finds are distributed between several museums in Spain and elsewhere, though a large part of the collection is kept at his old home in Mairena del Alcor (Sevilla).

Bonsor appears to have found prehistoric burials in silos at Acebuchal and at Campo Real (op. cit. p.44 and p.35-40). Details are, however, pathetically inadequate and the sites seem to have been re-used in Punic times. A flat idol was found in a silo at Acebuchal (Leisner, 1943, Pl.146, No.9), and from Los Alcores come sherds of painted pottery - red on cream - and pattern burnished ware, both types having designs similar to those known at Mesas de Asta. Also in this region, at El Carlero, the stone vessel decorated by cross-hatched ornament, which has given its name to a particular type of stone vessel, was found (M.G., Pl.159, No.4) and a probable symbol pot (M.G., Pl.64, 2 & 3).

Cueva del Vaquero /

Cueva del Vaquero (Gandul). (M.G., Pl.66 and p.197-203.)

A corbel-vaulted passage grave.

La Canada Honda B. (Gandul). (M.G., Pl.67, 2, p.203ff.)

An orthostatic passage grave.

Dolmen de Soto I (Trigueros, S.E. Huelva Province).

(M.G., Pl.71, p.224). A gallery grave.

The three big tombs near Antequera - Cueva del Romeral, Cueva del Menga, and Cueva de Viera - have been robbed in antiquity and finds from them are sparse. The only noteworthy item is a stone vessel from Viera.

El Minguillo (Cordoba). (M.G., Pl.53, p.189). A round grave.

b. Discussion

There is evidence from this region for a phase corresponding to the V.N.S.P. I/L.M. I phase and it would include the level with pattern burnished pottery from Mesas de Asta. Features of this phase are more common in south Portugal and the grave of Alcala 3 is especially important.

Pottery: platters were found at Nora, Alcala 3, Monte Velho 2 and 3, Vaquero, and Gandul B (Fig.3, 1). The bird vase from La Zarcita is remarkable and has no immediate parallels. It is perhaps more intelligible when it is remembered that stone animal vases were found at Olellas and Carvalhal. The chalice from the same site is also noteworthy and has no parallels in the Peninsula in the early bronze age.

Stone: cult objects are rare in these graves, though round idols were found in Monte Velho 2 and 3, and stray finds of idols are known from Algarve.

Stone /

Stone vessels were common and were found in Alcala 1,2,3,5,6 and 8, Monte Velho 2 and 3, and Viera. All were plain and usually of the Alcala type (Fig.4, 4). A decorated stone vessel, very similar to a decorated bone container, was found at El Carlero (Carmona) (Fig.4, 3), but most interesting of all were the clay pot imitations of stone or bone containers found in the cave of La Mora, Jabugo.

Slate plaques were not common but were encountered at Marcella, Nora, and Alcala. Callais beads, frequently barrel-shaped, are known from Alcala 1,2,3 and 8.

Flint: trapezes seem to be confined to S. Bartolomeu, but arrowheads with deep hollow bases are known from Marcella, Nora, Alcala 1 and 2, S. Bartolomeu, and Grandul B, and with less deep bases from Alcala 3 and 8, and Monte Velho 1. Otherwise, arrowheads are mainly simple straight or hollow-base types.

Flint daggers were found at Marcella, Alcala 1, El Minguillo, and Cueva de la Mora. They are mainly triangular in shape and some resemble the Casa da Mora types in Portugal (Fig.8, 1 and 2).

Bone: a flat bone idol was found in a silo grave at Acebuchal. A bone comb with cross-hatched ornament is known from Marcella, and a box with similar ornament from Grandul B. A curious 'ivory lid' decorated by engraved zigzag ornament is known from Nora, and a plain bone button was found at Jabugo. A bone spatula-ended pin was found at Alcala 2, while groove-headed pins are found at Nora and Aljezur, and a plain tubular pinhead at Soto I.

A simple bone container with cross-hatching was found in Monte Velho 2.

Metal: /

Metal: the most important site in this respect is undoubtedly Alcala 3, where three axes, five daggers, a chisel, an awl, and various pieces of hammered metal were found. Two of the three axes are of the long narrow type already noticed as typical of the L.M. I phase and called Tagus axes. The third axe is smaller (6 cm. long) and may have been a chisel. The chisel, small and slender, is of a type frequently found at Vila Nova de S. Pedro (Fig.10, 2). The daggers, with one exception, are all provided with one or two mid-ribs on both faces and the blade is roughly triangular and from eleven to fifteen centimeters long. This dagger type is, however, further characterised by a notch on either side of the heel (Fig.10,1). They resemble the L.M.57 dagger in all respects except one, and that is that the L.M. dagger only has a unifacial mid-rib. This indicates that it must have been cast in an open mould, whereas the Alcala daggers must have been cast in a closed mould because they have bifacial mid-ribs. The difference is vital, because otherwise, in the Peninsula, closed mould casting was not in use until Argaric times and even then rather sparingly, but yet the finds from this grave are all indicative of an early date. Similarly, the dagger of comparable type from Los Millares was found in an early grave (see p.124). Thus it is possible to conclude that the daggers from Alcala 3 do belong to the V.N.S.P. I/L.M. I phase. The evidence so far available suggests that the colonists were in possession of knowledge on metal working which they were unwilling to pass on to the indigenous inhabitants. Their presence in the western Mediterranean is probably due to their search for metal ores. The daggers of Alcala /

Alcala show advanced metallurgical techniques and as such must be attributed to the colonists. The axes too are of the same type as those used by the colonists at Los Millares. The saws, knives, and copper belt from the same grave must also, presumably, be attributed to this phase.

A glance at the map, IX, shows that there is a concentration of the early or Tagus axe type in the Alcala region and this is no doubt a result of the activity of the colonists in that region. Besides the graves, a settlement was also reported from Alcala, but no details are known about it.

In the Bonsor collection at Mairena del Alcor, there were also a few copper axes of the early type.

G. ALMERIA

a. The sites and their finds

The settlement of Almizaraque

The site second in importance to Los Millares is Almizaraque, which is situated near the village of Herrerías in the north-east corner of the province of Almería, near the mouth of the Almanzora river.

The settlement of Almizaraque occupies a small mound, which looks remarkably artificial, in low ground between the Almanzora river and its tributary, the Rambla de Mulería. In size it is comparable to the citadel at Vila Nova de S. Pedro (Pl.34). Graves were found in a low natural hill nearby.

Siret excavated Almizaraque, but the drawings and descriptions of /

of the finds which he had prepared for publication were destroyed during the Civil War in Spain. Cuadrado, who published a note on the site, states that it was surrounded by a deep ditch (Cuadrado, 1946) and cuttings in the mound are supposed to have revealed 2 - 3 m. of superimposed levels of earth and stones lying on virgin soil. Labels in the Archaeological Museum in Madrid refer to silos and huts, and also to three graves, called Encantada 1, 2 and 3, whereby the finds from grave 1 can be identified with the finds from the grave published by Leisner (Leisner, 1943, Pl.28, No.1). The finds from Almizaraque, discussed below, are only those on display in the Archaeological Museum in Madrid. Many more must be stored away in the cellars of that Museum.

Pottery: little plain pottery is on display. There is a twin vase of two simple bowl types, and a triple vase of fine black ware but also in the form of three simple bowls. There are several sherds of symbol pottery, some beaker sherds, and pottery decorated by incisions.

Clay plaques, rather long in shape, with two perforations at one end; fragments of clay horns, or clay arcs, perforated at one end were found.

Stone: according to Cuadrado, there were over 2,000 stone objects. These include:- axes and adzes; stone pendants; a round idol; part of a stone bracelet; a decorated stone sandal (Jalhay and do Paco, 1941, Fig.21); a flat stone idol; a stone idol representing the lower rear half of a human being; and a stone idol representing the lower half of a female figure.

Flint: /

Flint: blades, flakes, and bifacially worked sickles; tanged arrowheads are prominent in the selection on display; also deep and ordinary hollow-base arrowhead types, and a leaf-shaped arrowhead. From one of the silos comes a trapeze.

Bone: phalanges and decorated long bones (M.G., Pl.92); bone points and spatulae; a flat bone object with nicks along the edge - possibly an idol; two bone spatulae-ended pins; bone handle; bone v-perforated tortuga button.

Metal: according to Cuadrado (1946) there were a 'centenar' of flat axes, awls, and chisels. Of the few copper objects on display in the Museum, the axes are certainly of the L.M. I type and some of the chisels are of the early type.

The finds from the silos (Nos.3,7,12 and 22) are uninteresting. There is a trapeze arrowhead and a few odd flint blades and a bead similar to the Hoya de la Mina beads. It would be interesting to know if the silos can be dated to the settlement at Almizaraque or if they may be earlier.

A particularly significant find was that of the skeleton of a big bull in a silo, and nearby a number of decorated long bones was found.

According to Cuadrado, there are remains of esparto grass objects, and of clay, marked with canes from the hut walls.

Siret believed that the exploitation of the rich silver deposits at Herrerias was begun by the inhabitants of Almizaraque. No objects of silver have been found at the site, but many of the stones used for building the prehistoric habitations could, according to /

to Siret, who was a mining engineer, only have come from the inside of the silver mine. The copper, according to Siret, does not come from the immediate neighbourhood.

There are also three graves to be considered :-

Grave 1. (M.G., Pl.28, 1).

Grave 2. contained :-

Pottery: plain ware and one vessel with lugs.

Stone: beads, and a wrist guard.

Flint: two blades.

Bone: spatula and a shell.

Metal: fragments of ten awls.

Grave 3. contained :-

Pottery: plain bowl; beaker-shaped vessels; a deep bowl-shaped pot, with symbol decoration.

Stone: large white marble disc; greenstone axe and other axe; a chisel; beads.

Flint: six tanged, and four trapeze-shaped arrowheads; a flint borer; flint blades.

Bone:

Metal: part of a metal ring.

Campos.

This fortified house, excavated by Siret at the end of the last century, is situated near the village of Campos which lies to the north of Cuevas de Almanzora (or de Vera). The stone-built rectangular enclosure is particularly interesting because it is provided with towers at each of the three surviving corners (Siret, 1887 /

1887, Pl. 9-10), thus making it comparable to Vila Nova de S. Pedro and Los Millares. Its diameter is c. 15 m. The finds were as follows :-

Pottery: plain bowls, and bowls decorated by incision; clay arcs perforated at one end, and lumps of clay marked by impressions of canes.

Stone: axes and adzes.

Flint: thirty-one tanged arrowheads, sixteen leaf-shaped arrowheads, one hollow-base, twenty-seven flint blades.

Bone: points, spatulae, needles, a perforated toggle, phalanges, bone handles.

Metal: two flat axes, nine chisels, five awls, bracelets.

Finds of seeds are also reported from this site.

Tabernas.

A settlement site lying above the gorge of the Rambla de Honda, near the village of Tabernas, north-north-east of Almeria. It was first excavated by Cuadrado and later by Santa Olalla, neither of whom published any account of their work. It appears to be of the same date as Los Millares.

Velez Blanco.

Situated near Velez Rubio in the north of the Province of Almeria, this site occupies a small conical hill with an extensive view in all directions. There appears to have been a stone-built enclosure wall. The excavator, de Motes, also reports finding a circular hut, 2.00 m. in diameter (de Motes, 1918).

Pottery: hemispherical bowls; wide flat-bottomed pots with narrower /

narrower mouths; carinated pots (Argaric?); tall hour-glass-shaped pots (bases for Argaric chalices?); a globular pot with an erect rim and a zone of incised decoration below the rim - the motifs employed are zigzags and interlocking triangles; a sherd of symbol pottery; clay arcs, perforated at the end; and round and oval perforated clay plaques (Argaric?).

Stone: axes and whetstones.

Flint: scrapers; bones; saws; tanged, hollow-base, and leaf-shaped arrowheads.

Bone: points, spatulae, and phalanges.

Metal: metal found in three houses.

As well as these settlements there are several isolated graves to be considered. The more important are listed below :-

Llano de la Jaunton 5 (M.G., p.69, Pl.6, 3).

Llano de la Atalaya 6 (M.G., p.66, Pl.7, 2).

Llano de la Atalaya 3 (M.G., p.65, Pl.7, 1).

Loma del Campode Mojacar 2 (M.G., p.57, Pl.26, No.2).

Loma del Belmonte 1 (M.G., p.59, Pl.27, No.1).

Loma de las Eras 2 (M.G., p.74, Pl.29, 1).

Cabecito de Aguilar (M.G., p.60, Pl.29, 2).

Loma de los Liniales 9 (M.G., p.75, Pl.30, 1).

Rambla de los Pozicos 8 (M.G., p.75, Pl.30, 2).

b. Discussion

Before considering the spread of Los Millares influence into the interior, i.e., the province of Granada, it is necessary to summarise the significance of the sites given above.

Almizaraque /

Almizaraque was obviously an important settlement of the L.M. I period, and has many parallels with Los Millares. It, too, shows influence from the Almeria culture, for example, the flat idol, callais, and tanged arrowheads, and, if these influences are as predominant as is suggested by the proportion of tanged arrowheads to other types on display in the Archaeological Museum, it could be argued that Almizaraque is, in fact, the earlier of the two.

Almizaraque shows good parallels with the V.N.S.P. I period in Portugal with the decorated sandal, the ox burial, the human figurines, and the spatula-ended pin. It also shows relationship to Alicante in the decorated long bones, similar to those from Cueva de la Pastora.

The site continues in use until the beaker period, but probably ends before the rise of, or perhaps due to the rise of El Argar, which is less than 15 km. distant.

The grave at Belmonte 1 is of particular interest as it contains a painted pot, the shape of which is reminiscent of the stroke burnished pottery from Vila Nova de S. Pedro; the design of horizontal rows of herring-bone painted in white is also reminiscent of this pottery. Baetyloi were also found beside this grave, but the other grave finds consist of a beaker, found together with a tanged dagger, a palmela point, a bracer, and gold. Painted pottery was also found at Eras 2, the design was also painted in white and the motif was similar to the previous example, but the pot was a hemispherical bowl. From Pozos 8, comes a possible twin vase.

Baetyloi were found at five of these graves, round idols in another /

another two, and phalanges in another three, only one of which was accompanied by round idols and baetyloi (Cabecito del Aguilar). A fragment of a stone vessel, called "gypsgefass" by Leisner, decorated by cross-hatching, was found in Jaunton 5.

Although features of the L.M. I phase appear in several graves in Almeria, these graves can rarely be said to show purely Los Millarean characteristics, but rather the impression is given, if one compares the grave finds from L.M. I graves and from the other Almerian graves, of the intrusion of Los Millarean features in an alien environment.

H. OTHER AREAS OF THE PENINSULA

The other areas of the Peninsula must now be considered, in order to discover the extent of influence from the colonies of Los Millares and Almizaraque, Mesas de Asta, Alcala and Vila Nova de S. Pedro.

a. Granada

The graves listed below are fully published by the Leisners, and it is necessary only to give the reference to their publication.

Llano de la Sabina 96 (M.G., p.92, Pl.35, 6).

Loma de las Vinas 116 (M.G., p.96, Pl.36, 27).

Llano de la Sabina 126 (M.G., p.97, Pl.36, 29).

Hoya del Conquil 46 (M.G., p.100, Pl.37, 2).

Llano de los Castellones 8 (M.G., p.101, Pl.37, 3).

Llano de los Castellones 7 (M.G., p.101, Pl.37, 5).

Hoya del Conquil 48 (M.G., p.102, Pl.38, Gr.6).

Llano /

Llano de la Cuesta de Almiel 24 (M.G., p.102, Pl.38, 9).

Hoya de los Castellones 19 (M.G., p.113, Pl.40, 38).

La Gabiarra 78 (M.G., p.118, Pl.41, 7).

Rio de Gor 5 (M.G., p.122, Pl.43, 1).

Llano del Carrascal 6 (M.G., p.124, Pl.43, 8).

Fonelas 7 (M.G., p.137, Pl.45, 1).

Fonelas 10 (M.G., p.137, Pl.45, 2).

Fonelas 9 (M.G., p.138, Pl.45, 4).

Fonelas 2 (M.G., p.139, Pl.46, A5).

Fonelas 3 (M.G., p.139, Pl.46, A6).

Meseta del Mudo (M.G., p.166, Pl.50, D1).

A brief examination of the grave finds from the above graves shows that the finds typical of L.M. I which occur here are in a foreign environment.

Pottery: no painted pottery, but some rather interesting decorated pots which obviously imitate decorated stone and bone vessels. They are found in Castellones 7 and 8, and Meseta del Mudo and Vinas 116. Another interesting pot, with the back hollowed out, was in the form of a cow. This must be compared with the pottery bird vase from La Zarcita and the stone vessels from Olellas and Carvalhal.

Stone: stone vessels were found in Carrascal 5, Fonelas 2, 7 and 10, that from Carrascal 5 being decorated by cross-hatching. Forms were in all cases simple with plain upright sides. A round idol was found at only one grave (Castellas 19). A barrel-shaped callais bead was found in Fonelas 10.

Flint: few flint daggers were encountered, tanged arrowheads seem /

seem to be slightly commoner (thirteen graves) than the deeper hollow-base variety, and leaf-shaped arrowheads (six graves) are also common. Trapezes are found in seven graves which would be a very high percentage if these graves are not considered as belonging to the indigenous inhabitants.

Bone: bone containers were found in two graves - Sabina 96 and Gor 5. In both cases they were decorated by cross-hatching.

Ivory pins were referred to by Leisner, but for the purposes of this survey, they have been regarded as bone awls. Grooved pins are relatively common (M.G., Pl.46 A 10, 11, 13 and 12, Pl.47, 1) and are found with trapezes.

Phalanges were found in four of the graves though they are found in other graves in the area. One of the phalanges was decorated by the eye motif (Castellones 19).

Metal: copper axes or adzes of the Tagus type were found at Conquil 48, Almiel 24, Gabiarra 78, and Fonelas 10, and the Conquil 48 grave also yielded an early type of chisel.

"Gipskeramik", so called by Leisner, was found in three graves of this group, all at Fonelas, though it is also known from other sites (M.G., p.137). The vessels from Fonelas 3 and 9 could be imitations of stone vessels but the vessel from Fonelas 10 is distinct. It resembles an ostrich egg in shape and is decorated by panels of cross-hatched ornament separated by narrow plain zones. Decorated ostrich eggs are known from the Punic site at Villaricos (near Herrerias), but Leisner seemed satisfied about the bronze age dating of this vase. The division of the design into panels may be likened to the bone containers found in Portugal.

A very small proportion of the total number of graves contained objects considered as typical of L.M. I. Those objects that were found, arrowheads, copper axes, etc., are of a fairly practical nature. These objects tend to occur in graves together with simple objects which are not typical of Los Millares, but rather of the indigenous culture as for example the trapezes, blades, and stone axes, etc. A good example of this is seen in the graves of the Fonelas group which, besides having stone vases, copper axes, etc., also contain trapezes and tanged arrowheads, etc. The fact that the grooved pinhead, considered by Leisners as being of Beaker date (M.G., p.438 and p.452), occurs in this type of grave with trapezes must surely indicate that it is contemporary with the L.M. I phase (see p. 99), since objects of L.M. I date are also found with trapezes in the same area of Fonelas.

The imitations of stone and bone containers in clay are significant and suggest that they are the work of the indigenous inhabitants rather than the colonists, who would certainly be in command of the manufacturing techniques of these, even if they had not possessed actual vases in that area.

Thus it is justifiable to assume that the graves of Granada belong to the indigenous inhabitants of the area and in no way to the colonists of Los Millares or Almizaraque. Contact between the two groups seems to have been well established, because the indigenous inhabitants wished to imitate objects brought by the colonists, and other objects they were able to acquire, though whether this was by trading or by raiding, is uncertain. The colonists may even have explored the Granada area in search of metal ores.

Reference to the map IX shows that there is a concentration of axes in the Los Millares and Granada regions.

b. The Levante

Campico de Lebor, Totana (Murcia).

This site is not in the Levante but comes into this section as an area peripheral to areas of primary colonial influence.

The site is not far from the Cueva de Blanquizares (see p. 60) and was investigated by Val Caturla. A rectangular hut and silos were uncovered and the following was found (Val Caturla, 1948) :-

Pottery: sherds.

Stone: axes, including a greenstone axe, two querns.

Flint: flakes, blades; saws; and arrowheads, (trapezes and tanged and some leaf-shaped).

Bone: points.

El Cabezo de Navarro (Onteniente, Alicante).

The finds from this site which are in Alicante Museum are not very informative. They include :-

Pottery: bowls; a carinated pot; and a pottery spoon.

Stone: idol(?); two stone axes.

Flint: saws and flakes.

Bone: v-perforated prismatic button; bone points; handles; and a pendant.

Metal: leaf-shaped Palmela point.

Cabezo Redondo (Villena, Alicante).

A settlement site about 3 km. north-west of Villena, consisting of a conglomeration of huts, frequently built into the hillside, with walls /

walls and roofs of clay. They are more or less rectangular in shape. The finds were rich (Soler Garcia, 1949).

Pottery: mainly rounded profiles; some pots resemble the Levante bronze age types.

Stone: querns and bracers.

Flint: sickles.

Bone: points and awls.

Metal: rivetted dagger; barbed and tanged metal arrowheads; copper awls; and a gold earring.

Esparto grass: sole of a sandal.

Acequion lake (Albacete).

This is a low lying area in the plain of La Mancha in the middle of which is a small circular mound of high ground, which may, in rainy seasons, become an island. It appears to have been defended by an enclosure wall. Santa Olalla compares it to Almizaraque, though he illustrates no finds from the site (Santa Olalla, 1951, p.5-12).

La Ereta de Pedregal - Navarres (Valencia).

The modern town of Navarres is situated at 250 m. above sea level in a wide fertile valley. The area was once swampy as is shown by the flora, though by the 18th Century, the peasants had been able to reduce much of the swampy area to arable land. The previous extent of the lake is shown by the colour and structure of the ground and it may have measured about 1,300 x 700 m. Stray finds had been noticed in one area and exploratory excavations were carried out (Chocomeli, 1946, and Ballester Tormo, 1949, p.80ff). According to Ballester Tormo the sequence was as follows :-

Level 1 /

Level 1 - Disturbed soil c.0.40 m. deep.

Level 2 - White level c.0.40 m. deep.

Level 3 - Earth becomes darker c.0.35 m. deep.

Levels 4, 5 and 6 - Earth markedly darker c.0.60 m. deep.

Level 7 - Barro turboso c.0.20 m. deep.

Level 8 - Turba estrato c.0.50 m. deep.

There were apparently no signs of huts or hearths, but lumps of clay with impressions of canes were found, nor were there any signs of stone walls.

Pottery: may be classified as Almerian according to Ballester Tormo (1949). Finds are mainly of sherds, but two semispherical bowls were found and also pottery spoons. There is one crude spout. The pottery is mostly plain and there are frequent lugs. Remains of five oblong clay plaques, which are perforated, were discovered.

Stone: remains of eighty-two axes and adzes, many of which are quite small; chisels; three hand querns; two stone balls; small axe pendants; and beads, but apparently none of callais.

Flint: Ballester Tormo refers to 1,400 arrowheads, but there are only 136 on display in Valencia Museum. Of these over sixty were tanged, over twenty were leaf-shaped, over five were leaf-shaped with bilateral barbs, and about nineteen are star-shaped. A few flint trapezes; many flint blades and small saws with a glossy edge; borers and 'daggers'.

Bone: bone spoon; 110 points; spatulas; a grooved pendant; a v-perforated pyramidal button; a decorated horn idol; and circular bone discs with two perforations.

Metal: /

Metal: three flat axes; awls; and fragments of metal.

Graves.

There are few grave finds from this area (cf. Leisner, 1943, p.81 and 82) and certainly none of significance.

None of the sites referred to above shows strong connections with the L.M. I phase. The finds of v-perforated buttons from Cabezo de Navarro and Ereta de Pedregal indicates their connection with the beaker reflux movement (see p.325), while the pottery, metal types, etc. at Cabezo Redondo indicate that it was contemporary with the Argaric bronze age.

The trapezes, tanged arrowheads and the greenstone axe found at Lebor, indicate that the site is related to the Almerian culture and/or the Fosa graves. At Ereta de Pedregal, the decorated horn idol and flat copper axes indicate contemporaneity with the L.M. I phase, but the pottery spoons, the spout, the arrowhead types, the bone spoon, and the grooved pendant all indicate connection with the caves of this region (see p.). The arrowheads too may be indicative of associations with the Almeria culture. Thus it is possible to consider Ereta de Pedregal as a site established probably by the local population who had already been in contact with the Almeria culture at about the time of L.M. I. The site, however, continued in use or was again used, into beaker times, as is shown by the v-perforated button.

c. The Alentejo and Beira

Although the graves from the Alentejo were discussed under a previous section (see p.62ff) and it is known that they do not have assemblages /

assemblages of finds typical of the early phase at Vila Nova de S. Pedro, it is necessary to examine a few of the more important sites.

Anta Grande da Commenda da Igreja.

The largest of the Alentejo dolmens, Anta of Commenda da Igreja is situated near the village of S. Geraldo, 16 km. north of Montemor-o-Novo (Pl.35 and 36). The finds lie, unpublished, in the Ethnological Museum.

Pottery: numerous pots, the commonest form being a hemispherical bowl or a globular pot with a short erect neck. There are also carinated vessels and short cylindrical vessels with flat bases. There is a small burnished pot with a lightly rounded base, a cylindrical body, and a narrower neck. The body of the pot is decorated by grooves in circular formation, very reminiscent of a bone container from Vila Nova de S. Pedro. Remains of an oval clay plaque with perforations were also found.

Stone: axes; two chisels; two rough stone balls; twenty-eight decorated or plain slate plaques; small axe pendants, some in greenstone; a small animal figurine resembling a rabbit (similar to ones found at Cova da Moura, Fig.4, 5); a greenstone bead decorated by grooving.

Flint: a flint dagger; over 182 arrowheads, sixteen of which are trapezes, ten have deep hollow bases, seventy-eight are hollow bases, forty-four have straight bases, twenty-four are leaf-shaped, of which about four have bilateral barbs, seven have rudimentary tangs, and three are mitre type.

Anta Grande da Ordem /

Anta Grande da Ordem (Avis).

Excavated by Silva and Leite de Vasconcellos (Mattos Silva, 1895, p.120 ff). The finds are in the Etnological Museum.

Pottery: thirteen pots, including six hemispherical bowls, one globular pot with erect rim, three lightly carinated bowls, and a flat-bottomed vessel.

Stone: two axes, slate plaques, axe pendants, and thirty-five beads, including a small cylindrical green bead.

Flint: fourteen arrowheads, of which one is a trapeze, one a hollow base, six are straight bases, and six are leaf-shaped, of which three have bilateral barbs; flint blades.

Metal: two fragments of copper knife.

Anta da Capela (Avis).

The finds are in the Etnological Museum, and are known to include :-

Pottery: three vessels, two of which are hemispherical bowls and one has a flat base.

Stone: four axes; one adze; four slate plaques; green stone axe pendant; and beads.

Flint: thirty-eight arrowheads, which include two trapezes, eleven hollow-base; five straight bases, and five have rudimentary tangs, fifteen leaf-shaped, of which seven have bilateral barbs.

Bone: three groove-headed pins, and one tubular-headed pin.

Beira

Orca do Tanque (Vila Nova de Paiva, north-north-east of Viseu).

Finds in the Etnological Museum include :-

Pottery : /

Pottery: hemispherical bowls; a cylindrical vessel with a flat base; another with an inturned rim; and another with a splayed mouth; a globular pot with a wide erect neck.

Stone: four axes.

Flint: flint blades; two big bifacially flaked daggers; 135 arrowheads, including forty-nine hollow-base, nine with deep hollow bases, seven mitre type, thirty-two leaf-shaped, most of which have bilateral barbs, nine with rudimentary tangs.

Orca dos Juncais (Vila Nova de Paiva).

Pottery: eleven vessels, including one hemispherical bowl, three carinated bowls, two beaker-shaped pots, four flat-bottomed vessels with high, outwardly splayed sides. One has a handle and resembles pottery from north Portugal (Ponte da Barca, Mairos, and from a cist called Coimbra at Terras de Barrosa).

Sobreda (Seixo, near Figuera da Foz).

A passage grave excavated by Santos Rocha (Santos Rocha, 19).

Finds include :-

Pottery: a bucket-shaped pot with lugs below the rim.

Stone: an axe.

Flint: nuclei; scraper; and twenty-one arrowheads, including sixteen hollow-base, two irregular trapezes, and two with rudimentary tangs.

Graves such as Commenda da Igreja show parallels with sites in the Tagus Peninsula and thus help to clarify the problems of relative chronology.

The decorated pot from Commenda da Igreja may be an imitation of bone /

bone containers, and the flint dagger can be paralleled in the V.N.S.P. I phase, and the small animal figurine can be paralleled at Arruda. The greenstone pendants, the trapezes, the leaf-shaped (with and without bilateral barbs) arrowheads, slate plaques, and grooved pinheads found in some Alentejo dolmens are all features already noticed in connection with V.N.S.P. I sites, such as Palmela, Cascais, and Monte Abraao and thought to be the result of the indigenous population with their heritage in the impressed ware and Almeria cultures. In the Alentejo, these features do not appear out of place, but instead, the mitre arrowheads and flint daggers form the foreign element. Thus, for part at least of its history Commenda de Igreja was contemporary with V.N.S.P. I.

It is necessary to know, however, if it antedates it. Simple trapezes and axes with circular sections are considered by Heleno and Leisners as indicative of an early phase in the development of dolmens. One of the Igreja axes has a thick oval section and the trapezes are mainly asymmetrical and thus it is possible to consider that these represent an early stage in development at Igreja but, if they do, it means that the people who left them were responsible for building this large dolmen, whereas elsewhere such finds normally tend to occur in more primitive grave types. On the other hand, in the Tagus area, similar trapezes and axes have been found in connection with V.N.S.P. I phase. Also the statistical analyses of graves in the Alentejo and in Huelva revealed the fact that asymmetrical and simple trapezes are commonly found together and the asymmetrical trapeze is further found with flat idols and greenstone objects /

objects. Greenstone objects were found in Igreja and flat bone idols were found in a more developed form, in slate plaques. Thus it would be difficult to consider that Commenda da Igreja, Ordem, etc., were built earlier than the V.N.S.P. I phase, but they were at least built during it, and it is perhaps easiest to see sites such as Igreja as the response of the indigenous population to the arrival of the V.N.S.P. I people and their tremendous activity in the architectural line. This, too, helps to make sites such as Monte Abraao more understandable. It is probably a dolmen built by indigenous people in the Tagus area, who were in communication with the V.N.S.P. I people. It is possible that many Alentejo dolmens belong to this phase.

In Beira, insufficient material is available for many valid conclusions to be drawn. The mitre arrowheads and flaked daggers from Orca do Tanque suggest a parallel with V.N.S.P. I but there are no slate plaques from this site and indeed they are but rarely found in the whole of Beira. Other early features such as greenstone and trapezes are also rare. Thus it is possible that the Beira dolmens were established at the earliest in the V.N.S.P. I phase. There is evidence in the flat bottomed pottery to suggest that these sites continued in use until the later bronze age. This is perhaps best shown by the flat bottomed handled cup which has been found in a cist grave in north Portugal - an area which was only fully developed in Argaric bronze age times when cist burial was more common.

d. Salamanca

The information for this area was obtained from two articles by Cesar Moran (1931 and 1934), and from a study of material on display in the Archaeological Museum in Madrid. Cesar Moran published notes on the excavation of forty-eight dolmens in the regions of Salamanca and Zamora. Finds were scanty and consisted mainly of pottery sherds, stone axes, some green beads, flint blades, trapeze, and leaf-shaped, arrowheads, and some copper objects. The most important graves were :-

Aldea Vieja de Tormes, Salamanca, which, according to the Museum label, contained the following :-

Pottery: globular pot with short erect rim; bag-shaped pot; two hemispherical bowls; beaker ware.

Stone: green beads; small axe pendant; flint blades; arrowhead with rudimentary tang.

Metal: tanged dagger; two Palmela points; an awl; and, according to the publication, a gold belt which is not on display in the Museum.

Dolmen of Almeida de Sayago, Zamora, The Museum label indicates that it contained the following :-

Pottery: hemispherical bowl; sherds.

Stone: axe; green bead; flint blade.

Metal: tanged dagger.

Dolmen of Terimuelo, Salamanca. The Museum label indicates that it contained the following :-

Pottery: incised beaker ware; plain sherds.

Stone: /

Stone: axes; axe pendant; flint blades; arrowheads with rudimentary tangs; elongated flint points or daggers.

From this area there are no finds which can be compared to the V.N.S.P. I assemblage, but there are finds which can be paralleled in sites of V.N.S.P. I date (arrowhead types, etc.). There is quite a strong beaker element present, too, and, altogether, the impression given is of lateness and primitiveness. These dolmens may date fairly late on in the V.N.S.P. I period and be the work of the indigenous neolithic inhabitants, probably near relations of the builders of the Beira dolmens.

e. The North

The information available from this region is scanty and the writer has not been able to visit the museums in this area. The information below was obtained from articles by Lopez Cuevillas (1955) and by Menendez (1931).

Lopez Cuevillas (1955) distinguishes several pottery types including a cylindrical vase with a curved base, hemispherical bowls, and bag-shaped vessels, all commonly undecorated.

Stone: axes; stone balls; callais beads; half schist bracelet.

Flint: blades. The usual arrowhead type is leaf-shaped with bilateral barbs, a few have hollow bases, and a few are trapezoidal. Exotic objects include flint daggers of northern European type, stone maces, and battle axes.

Metal: beaker metal objects.

McWhite (1950, p.45) believes that the stone maces found in Galician /

Galician mammoas should be dated in the Bronze Mediterraneo II. The flint dagger (from Cela Redondela), he thinks, can be dated to Montelius IV period.

There is no evidence of direct contact with the V.N.S.P. I phase in the Tagus area and the finds suggest that the dolmens are the result of the indigenous people who were, perhaps, moving slowly northwards. If McWhite's dating is correct, the mammoas continue in use until well into the Bronze Age, and, in fact, it is in the Argaric Bronze Age that the north-west was really 'opened up' (see p.479).

An important feature of the Northern dolmens is the appearance of painting on the upright stones, as for example at Pena Tu (Hernandez Pacheco and Conde de la Vega, 1914), Antelas (Albuquerque Castro, 1959, Fig.6), Chao Redondo (unpublished), and Pedra Coberta (Leisner, 1934, p.23-44). The last three have patterns which are fairly similar, Leisners have dealt with megalithic art in their publication of Pedra Coberta. Antelas is important because of a possible ship, painted in the design.

f. Cataluna

The megalithic graves of this area have been fully studied by Pericot (1950). A cursory glance at the finds shows that there is nothing which can be attributed to the L.M. I phase.

Pottery: beaker ware; button-handled vessels; and bowls.

Stone: rare axes; callais beads from Puig Roig and Llit del General (op. cit. p.81); amber beads from three sites; green slate plaques.

Flint: /

Flint: blades; Pericot also refers to flint daggers; arrowheads are mainly barbed, tanged, and leaf-shaped.

Bone: v-perforated buttons, and rare awls.

Metal: awls, including two with middle thickening; rings and bracelets; tanged daggers; and metal fragments.

Maluquer remarks on the apparent difference east and west of the River Llobregat. To the east of it, the graves are bigger and are passage or gallery graves in type, characterised by abundant beaker finds, big flint knives, and rarely metal. The pottery of this group is normally plain and simple. To the west of the Llobregat, pottery usually has a carinated profile and is decorated by cordons, beaker ware is rare, and button-handled pottery is common. The grave type of this group is also different. The small cist is common and, according to Maluquer, any bigger graves which are found show contact with the eastern group (Maluquer, 1942, p.171-188).

These graves had no direct contact with the early phases at Los Millares and Vila Nova de S. Pedro, and the number of the late finds such as beaker, v-perforated buttons, and late, metal types suggests that the graves were mainly in use during late Beaker and early Argaric times. The arrowhead types are related to the indigenous groups of further south (Valencia, etc.) and show no contact with Los Millares. It is suggested that these graves were built by indigenous peoples, perhaps moving northwards, who were unable to settle in Valencia because it was occupied by the people living mainly in caves, who were descendants of the cardial ware inhabitants.

g. Monchique (Algarve).

After the rich graves of Alcala, Nora, Marcella, and so on, the graves of the Monchique are remarkably poor. They were excavated in recent years by Viana, Veiga Ferreira, and Formosinho (1955), who have published inventories of the graves. Main finds from thirty-five graves include :-

Pottery: plain pottery.

Stone: axes, chisels; adzes; hammers (total 107); three decorated slate plaques; bracer; and 1,531 beads.

Flint: fifty-four knives; seventy-seven trapezes; five borers; twenty-one arrowheads, mainly simple, hollow-base types.

There is no parallelism with Alcala at all, and it is probably correct to assign the graves to indigenous inhabitants. They are quite probably later than Alcala 3 etc., because, despite the number of trapezes, they contain simple, hollow-base arrowheads.

I. DISCUSSION

The significance and relationship of finds in the different areas has been studied, and it is now necessary to study the relationships in the Peninsula as a whole and, wherever possible, to point out the Aegean parallels to these finds. For the sake of convenience, the same sequence of fortifications, graves, pottery, stone, bone, and metal will be observed. Reference will be made, during the course of this survey, to east Mediterranean sites containing objects which can be paralleled in the Peninsula. These lists should not be regarded as exhaustive, they are intended merely to give some indication of the possible area of contact in the East.

a. Fortifications

Certain aspects of the defences at some of the colonies, such as the use of bastions, or of devices for restricting and channelling the entrance of fortifications, cannot have been developed in the local neolithic cultures and must be regarded as foreign features introduced by the colonists.

The use of bastions in the Peninsula is not widespread and is known only from Los Millares, Vila Nova de S. Pedro, Campos, and probably Zambujal. At many other sites, the defences have been inadequately studied and more may yet come to light.

Sangmeister (Sangmeister and do Paco, 1956, p.229) drew attention to the similarity between the plans of Los Millares and Chalandriani (Syros) in the Cyclades and later, Blance (1957) published a brief survey of the use of this type of construction in the east Mediterranean, where the most important sites with bastions were /

were found to be in Egypt, and at Troy and Chalandriani. Other sites which can now be added to the list are Thermi V, early Helladic Aigina (Schachermeyr, 1955, Fig.57) and Gözld Kule, near Tarsus, where distinct offsets are visible on the early bronze age II fortification wall (Goldman, 1956, Pl.6). There is also a possibility that this type of construction was known at Lerna. In Egypt, artistic representations of bastions are known from the following (the writer's thanks are due to Prof. Fairman, who pointed them out), the Bull palette (Flinders Petrie, 1953, Pl.G 17-18, p.15), the Tehemu palette (ibid. pl.G.19-20, p.14) and the Nar-Mer palette (ibid. pl. J and K, p.16) and from a gaming piece, found in the Kings' Graves at Abydos (Scharff, 1929, Pl.33, Fig.279). A drawing of a similar tower is also known on an ivory plaque (Scharff, 1929, p.148, Fig.80). With the exception of Chalandriani and one or two of the Egyptian examples, all the sites have square or rectangular bastions.

It has already been suggested (Blance, 1957) that the towers in the Nuraghe of Sardinia and in the settlement walls in Mallorca may owe their origin to the same cultural tradition which brought the knowledge of this type of construction to the Peninsula during the early bronze age.

At Vila Nova de S. Pedro, there are three concentric walls and, at Los Millares, although only one wall is known, its length and the amount of space it encloses, together with the fact that it has to cross two valleys in order to cut off the Los Millares promontary, suggests that there is at least one inner wall. In fact, at Los Millares the outer wall may have fallen into disuse. Otherwise it is /

is difficult to understand why two graves were built, the one just inside, and the other just outside, the wall.

At Chalandriani in Syros, there are two enclosure walls, though whether or not they are contemporary is not stated. Tsountas does say that between the two walls, and in the towers, a mass of small, beach pebbles was found. Small stone chips were noticed around the second wall at Vila Nova de S. Pedro.

The entrance at Vila Nova de S. Pedro, which is exceptionally narrow, is only 0.50 m. wide, but this is comparable with the narrow entrance in the inner enclosure wall at Chalandriani. At Los Millares, although the plan of the entrance has not yet been published, it is known to have been very complex, and was prolonged into a passage, which probably had two or three gates. This is altogether more complex than the gateways of Troy II and is probably similar in idea to the type common in middle bronze age levels all over Palestine (Albright, 1954, p.).

The use of herring-bone walling (i.e. the stones of each row are laid diagonally to form a rough herring-bone pattern) was noted in one of the Los Millares graves and in a stretch of settlement wall exposed by erosion in 1958 (Pl.7 and 13). This technique is also found in the east Mediterranean and was noticed in Troy I, Thermi I (Lamb, 1936, p.15), and early Helladic Hagios Kosmos (Mylonas, 1934, Fig.2) and the early Helladic II level at Eutresis (Goldman, 1931, p.) and is no doubt known from other sites in that area.

There can be no doubt about the Aegean origin of the fortifications employed in the colonial sites in Iberia, not only because /

because of the good parallels, but also because of the improbability of their having been developed by any of the indigenous neolithic cultures.

b. Graves

Corbel-vaulted, chambered tombs are not known in the Aegean until Mycenaean times and it is not surprising that Siret thought that the idea came from Mycenea to Spain. Thus the origins of both the Palmela rock-cut graves, and the Los Millares tomb type, constitute a difficult problem which will be studied, but not solved, in the following discussion. Many unsuccessful attempts have been made to find exact parallels for the tomb types but this method of approach will not be followed here; instead different aspects of the burial customs and practices will be considered, with a view to locating some area in the Aegean where all the practices known from Spain are also to be found.

Collective burial was known in the east Mediterranean from early times, when it was practised in caves and rock-shelters. Later these caves might be modified or enlarged for use as communal tombs, or certain houses might be set aside for communal ossuaries, as for example in the early Minoan village of Gournis. The first indication of the use of specific buildings for collective burial in the Peninsula was during the Almeria culture, which was characterised by flat idols, which also have good east Mediterranean parallels. The impressed ware cultures had of course used caves for communal burial purposes.

Mylonas refers to the practice of collective burial in the graves /

graves at Hagios Kosmos, though, in some cases, the graves seem to have been used as ossuaries, and the original burial to have taken place outside the grave (Mylonas, 1934, 271). In Spain there is a possibility that certain graves of the Almeria culture were, in fact, used as communal ossuaries, for example Loma de la Torre 4 (see p.58).

Corbel-Vaulted Constructions were known from sites such as Arpachiyah and Cyprus, though one could query whether the latter ever had a corbelled roof. These are, however, very early sites and cannot be connected with the appearance of corbelled constructions in Spain and Portugal.

Rock-Cut Graves probably from the early and middle bronze age are known in Euboea.

Constriction of Entrances or Passages was noticed at Hagios Kosmos, where entrances averaged 0.45 m. in width and 0.40 m. in height. They were closed with slabs of stone (Mylonas, 1934). The same feature was noted in Syros (Tsountas, 1899, p.83) and at the tholos tomb at Krasi (Marinaros, 1929, p.138). At Hagios Kosmos the entrances were too small to have been used, and, in fact, Mylonas found evidence to show that the burial had been introduced through the roof of the grave.

Demarcation of the Grave by a mound or a circle of stones is known at Hagios Kosmos, where the area of the grave was marked by a kerb of stones (Mylonas, 1934, 270) and in the island of Leukas early Helladic graves were often surrounded by a circle of stone boulders, sometimes 9.50 m. in diameter, in which a tumulus of earth and stone had been heaped. Many of these mounds contained simple earth /

earth graves or pithos burials.

Placing of offerings for the dead outside the tombs, sometimes in a special niche, is a practice found at Hagios Kosmos, in the Syros graves (Tsountas, 1899, p.80), and also in the chambered tombs of the Mesara (Xanthoudides, 1924, p. 90).

Burial of children in Niches is known at a later date, in tomb 529 at Mycenae, where the burial of an infant was found in a niche. But at Hagios Kosmos the bones of children were found in separate small cists.

This brief survey shows that, although the grave type itself cannot have been brought from the east Mediterranean to Spain, various distinctive features of the early graves at Los Millares can be paralleled there. It is also obvious from the above summary that Hagios Kosmos is an important site. This is partly due to the fact that it is one of the few necropolis sites of the early bronze age which is adequately published, but the fact that so many characteristics of the Los Millares graves are present there must be significant.

The graves at Hagios Kosmos are themselves of interest. The cemetery was near the settlement, and Mylonas distinguishes two grave types among the twenty graves excavated :

1. Cist graves of Cycladic type, made of slabs set on edge, and arranged to form a trapeze-shaped enclosure. They were usually roofed by two or three large slabs.
2. Graves built of unworked stone, arranged in semicircular and horse-shoe shaped plans.

The entrances, in all cases, face towards the settlement and are /

are small, suggesting that the body was introduced from above. The walls of the slab-built cist graves were more or less perpendicular, while those of the built graves inclined perceptibly inwards, usually from a point a little above the floor of the grave and in a manner similar to that noticed in the graves of Chalandriani. This makes them narrower at the top than at the bottom and gives them the appearance of a primitive tholos. The inclination is, in fact, achieved by the overlapping of the stone slabs. The roofs of the built graves, and especially of the semi-circular, or horseshoe shaped ones, was composed of three or more slabs placed on the walls of the grave and projecting over its opening so as to leave a small central hole which was closed by a single large slab. The side slabs of the roof were kept in position by small walls built over them, which served as counter weights (Mylonas, 1934, p.269). Mylonas believes that the slab-built graves are earlier than the stone-built graves.

It can be seen that all the features of the Los Millares graves are present in the east Mediterranean and it is not difficult to imagine that, owing to peculiar local conditions, at Los Millares itself, or in Portugal (e.g. excessive hardness of the ground, making secondary burial impractical), these features developed into the corbel-vaulted passage graves so typical of south Spain and Portugal.

c. Pottery

The imported pottery, from Mesas de Asta, is unique in the whole of the Peninsula (with the probable exception of Acebuchal) and includes pattern burnished, red monochrome, and highly burnished, grey wares. In the Aegean, pattern burnished ware is found in neolithic and /

and early bronze age contexts. Ozanne (nee Furness), upon seeing coloured photographs of the Mesas pottery, pointed out that its nearest parallels were in the material from Tigani in Samos where pattern burnished ware is characteristic of Phase II. At Tigani, as at Mesas, both grey and brown pattern burnished ware was found, any difference in colour most likely being due to firing, rather than to any deliberate attempt to vary the colour. The pattern was frequently on the inside of the sherds. The decorative motifs employed at both sites are also similar, with zones of cross-hatching occurring between completely burnished panels. Though this motif is fairly common in pattern burnished ware, and may represent nothing more than a skeuomorph of the type of basket container in which the vessels were carried, the cross-hatching at both Mesas and Tigani is noticeably elongated. It is unfortunate that little information is available regarding the forms of this ware at Mesas. Certainly, open bowls must have been represented there in order to explain the appearance of pattern burnishing on the inside of the sherd. At Tigani, pattern burnishing appears in deep open bowls. A sherd from Orchomenos (Kunze, 1931, Pl.IX, 3) has a plaited pattern burnished design reminiscent of a sherd at Mesas (Pl.26 at the end of row D).

Furness (1956, p.205-8) gives an excellent brief survey of the distribution of this type of pottery in the east Mediterranean. She was able to show further that Tigani can be related to Besiktepe and Kumtepe Ia. Kumtepe Ic is contemporary with Troy I and thus Kumtepe Ia and related sites, such as Tigani and Besiktepe, must be earlier /

earlier than Troy I. From Furness' survey, it is apparent that pattern burnished ware is confined mainly to the neolithic period and is probably earlier than Troy I.

Indications of the route by which this technique may have arrived in Spain are lacking. Surface finds of a peculiar type of burnished ware were made in south Italy by Bradford. The technique used is, however, that of burnishing over paint, which is quite different from the technique of normal pattern-burnishing of the type found at Mesas and Tigani.

Red monochrome and highly burnished grey wares are also known in the Aegean area, but exact parallels with the Mesas ware are difficult to find. Red ware in the form of bowls with rounded profiles or incurved rims were found at Tigani. The paste was not good and was covered by a red slip which tended to flake away easily. The slip had been applied to the outside surfaces only of certain of the vessels or to the inside surfaces of open bowls (Furness, 1956, p.187).

Red burnished ware is known from Sesklo levels, but it is believed to originate in the reddy-brown, pre-Sesklo coarse ware. The characteristic colour of it - orangey-red - distinguishes it readily from the strawberry-red of the Tigani ware, which is, in any case, applied as a slip. The colour of the Mesas ware is more similar to the Tigani material and the grey burnished wares from Mesas were distinctive because of the restriction of the burnish to the visible surfaces only. There is, however, no parallel in the shape of the vessels between Tigani and Mesas.

At Büyük Güllücek, 15 km. north of Alaca in Asia Minor (Kosay and /

and Akok, 1948), the bulk of the pottery is monochrome grey ware, though about 25% consists of red ware and about 6% of the pottery has incised decoration. One sherd of interest has parallel zones filled with oblique lines, alternating with undecorated zones of the same width (Kosay and Akok, 1948, XCIV, 26). Red ware is also known, but is less common, at Alisar and Alaca.

Dark burnished ware is known from several sites in Asia Minor and the Aegean and is also found at Tigani (Furness, 1956, p.184-5). Lunate or horseshoe lugs occur with this pottery type and further examples are known from Thermi, Troy I, Dimini, and Sesklo (Furness, 1956, p.185). Lunate lugs were the commonest type at Mesas.

In Lipari, monochrome red ware is characteristic of the late neolithic Diana culture. Although the shade of red is slightly different from the Mesas red ware, and the Diana culture ware is characterised by trumpet lugs which never occur at Mesas, some of the forms at both sites are similar (e.g. Brea and Cavalier, 1956, Fig.16, top row, centre sherd, or Fig.18b). Brea also states that bifacially worked arrowheads (apparently mainly the hollow-base type) arrived with the Diana culture (Brea, 195 , p.94). It is interesting to notice that the first signs of metallurgy were also encountered in a Diana culture level (Brea and Cavalier, 1956, p.35). At Diana, the red ware is not, however, associated with the grey ware or pattern burnished ware. Sherds of Diana style pottery have been found at Mgar and Borg-in-Nadur, in Malta, and are regarded as contemporary with the megalithic architecture (i.e. phase IA₁ and IA₂) (Evans, 1953, p.47-8).

This /

This brief and incomplete survey of pattern burnished ware and red and grey monochrome wares in the east Mediterranean is sufficient to show that the pottery from Mesas de Asta has good parallels there. At present Tigani shows the closest parallels but a more detailed study may reveal further possibilities.

White, or light on dark, painted pottery was confined to south-east Spain (map VII and M.G., p.500 ff). There is, however, a certain uniformity in shape of vase and motif between Spain and the Tagus area. The vase from Belmonte I is not unlike the cylindrical vessels of Vila Nova de S. Pedro, and the bowl shape, known from the Tagus area, is seen at Eras, and Los Millares 9. In the south-east, painting is applied to a greater variety of shapes than stroke burnishing in the Tagus area, but it is unlikely that these indicate the forms of the pottery brought by the colonists from the east Mediterranean to Almeria. The vase from Los Millares I and the amphora from Los Millares 40 are, in fact, similar to the pottery of the Almeria culture. The decorative motif used at both Los Millares and Vila Nova de S. Pedro is the herring-bone pattern which can be arranged either vertically or horizontally.

The Leisners (M.G., p.589) compared the light on dark painted pottery at Los Millares with the use of the same technique in Crete, which they dated to the E.M. III period. This technique, however, was not confined to Crete but was comparatively widespread in the East.

A discussion on the use of white-painted pottery is of significance only when one believes that painting in white on a clay coloured, or dark, ground is a more difficult or exotic technique than /

than painting in a dark colour on the same ground and that the appearance of white-painted ware at different sites is a related phenomenon. It could, on the other hand, be maintained that white painting is the natural result of having dark coloured pottery which one wishes to decorate by painting.

Garstang (1953, p.186-188) discussed the distribution of white-painted pottery which he had found in level XII at Mersin and pointed out that its affinities were all western rather than eastern. A more recent study of the problem was undertaken by Mellaart (1954, p.194 ff. and p.202 ff), whose map shows a concentration of the ware at a number of new sites in south-west Anatolia. Furness (1956, p.205) amends and amplifies Mellaart's list for the Aegean area. Mellaart (1954) suggests that there are two phases in the use of white-painted ware, one is contemporary with Troy I and the other is dated to the E.H. III - E.M. III period.

Stroke Burnished Ware is found only in the Tagus area, and the most important find spot is Vila Nova de S. Pedro. The finest sherds are of a very high quality, especially when compared to the local neolithic pottery. Plates 19-23 show the remarkable regularity of the grooves below the rim and the fineness of the stroke burnishing, and plate 24 illustrates a sherd of unburnished pottery from the same level, and which probably imitates the imported pottery. The resemblance in vase shapes and decorative motifs between the Tagus area and south-east Spain has already been noticed.

Details about the use of stroke burnishing in the eastern Mediterranean are non-existent and thus parallels can only be sought on the basis of form and decorative motif.

Sangmeister was the first to draw attention to the resemblance of the Vila Nova de S. Pedro imported ware to the Cycladic pyxides (do Paco and Sangmeister, 1956, p.222, footnote; see Tsountas 1898, Pl.9, 18 and 31, and Edgar, 1896-7, 35 ff., and Brent, 1884, p.42 ff). In the Cyclades, the herring-bone motif occurs on two main pot forms: (1) the squat cylindrical pyxide (Tsountas, 1898, Pl.9, 18 and 31) and (2) the taller jars (op.cit., Pl.9, 1 and 4). Plates 37 and 38 show a pyxides from Pelos in the Ashmolean Museum (No.AE435). The walls of this vessel are thick and uneven, and it has a grey-black paste with a medium sized white grit. The surface, though smooth, is not very burnished and the design consists of horizontal rows of herring-bone ornament which are not very even and regular. The grooves of the decoration are deeper than those of the Vila Nova de S. Pedro ware. In fact, this vessel compares unfavourably with the imported ware from Vila Nova de S. Pedro. Other differences, such as lack of a series of horizontal grooves below the rim and above the base in the pyxides, and the difference in shape between the squat pyxides and the slender Vila Nova de S. Pedro vessels, can also be pointed out.

Zervos (1957, Fig.81 and 82) illustrates two pyxides from Siphnos and Naxos with similar, but more regular, decoration than in the Oxford pyxides. The grooves are, however, still deeper than in the Vila Nova de S. Pedro pottery. This type of pottery is not common in other areas of the east Mediterranean. A pattern-burnished bowl from Aigina has a flat base and straight, outwardly inclined sides, the decoration consists of vertical herring-bone pattern, with horizontal /

horizontal lines below the rim (Fig.3, 12; and Welter, 1938, Fig.4, p.8). This vessel is very similar to some from Vila Nova de S. Pedro (Fig.3, 7; and do Paco, 1958, Fig.7). Stroke or groove burnishing may have been a device employed to imitate decorated metal objects, such as the gold jug from tomb B at Alaca Hüyük (Arik, 1937, CLXXI, 242) though this particular example is probably too late to be in any way connected with the Cycladic pottery. Herring-bone decoration is especially characteristic of the early bronze age pottery of the Cyclades. Thus the Cyclades would be the most likely place of origin for the Vila Nova de S. Pedro ware, especially in view of the fact that the fortification with bastions, employed at Chalandriani, can also be paralleled at Vila Nova de S. Pedro (see p.242).

Red-painted pottery is known from Los Millares and also from two cave sites - Montgo (see p.22) and Montefrío (see p.60). It is less distinctive than the other types of painted ware and is also well-known in the east Mediterranean. The most important site in the west Mediterranean containing sherds of red-painted ware is Gar Cahal in north Africa (Tarradel, 1955). The sherds, which have been likened to Serraferlicchio ware, were found below a level containing beaker sherds. This is very similar to the evidence from Los Millares and Vila Nova de S. Pedro where beaker ware was found to be later than the levels containing the imported pottery.

Leisner included a variety of pottery under the heading of symbol pottery but, for the purposes of this present discussion, the use of the term will be restricted to pottery decorated with the eye motif or with the concentric curved lines which characteristically accompany /

accompany this motif. The use of the eye symbol has been noted on pottery from Almizaraque, Velez Blanco, L.M. 4,7,15,37,57, Hoya del Conquil, and Reguengos, and sherds were found in the 1955 excavations in graves 40 and 17 at Los Millares.

The concentric curved line motif, sometimes used with plastic lugs in place of eyes, was noted on graves 2,7,9,16,21 and 40 at Los Millares, and at Palmela, while the use of plastic curved lines was found on a pot from El Carlero. It will be noticed that the distribution of this pottery is mainly in south-east Spain and primarily in Los Millares itself. Probable eye designs, but of a very simplified type, are known from the inside of two beakers from Las Carolinas (Madrid) and from Cordoba. In both cases, they are accompanied by stylized deer, a motif also known at Los Millares (graves 7 and 15). Simplified eye motifs are also found on clay plaques at Vila Nova de S. Pedro and on sherds from Furadours (Praganca), Peria sandpit (Madrid), and Cueva de la Mujer, but none of these simplified versions can be included in this discussion because they are more like suns than eyes and they may owe their origin to the local, indigenous, cave-art tradition (cf. Breuil, 1933-5). In fact, the appearance of this design in some Valencian and Catalan sites suggests that in other areas it survived into a later period than L.M. I.

The use of the eye motif is rather complex and cannot be easily attributed to the indigenous art tradition. Maier believes that it is connected in some way with the cult which uses models of feet or shoes or actual foot bones (phalanges and metapodials) (see p.96 /

p.96). Crawford, in a recent book (195), has dealt fairly exhaustively with the appearance of this motif in the east Mediterranean and its distribution in Europe. He attributes it to a cult of the 'Eye Goddess'. Thus its appearance in Spain is likely to be due to ultimate east Mediterranean influence, but whether this arrived directly from there with the colonists, or whether it arrived overland, together with the phalange idol, is quite uncertain at the moment.

The pottery vessel found in the settlement at Los Millares (M.G., Pl.154, 5) has often been compared to the Cycladic "candlesticks" (Zervos, 1957, Pl.142-151) though the comparison is very dubious.

Twin vases are also known in the Cyclades (Zervos, 1957, Pl.75 and 139).

Horned, or plain, cylindrical spit supports were found at Vila Nova de S. Pedro. Such objects have not been reported from elsewhere in the Peninsula and this may be due to lack of recognition of them. For the purposes of this study, they must be regarded as unique in the Peninsula. They have good east Mediterranean parallels.

Horned spit supports are the more interesting of the two types. They have been found at :

Asine, dated to E.H. III (Frodin and Person, 1938, p.232-3, No.169/7).

The Cyclades, an elaborate one (Sjovak, 1920, p.185).

Mochlos, a low one with widely spaced horns and no perforation (Seager, Fig.48, 31, p.93).

Troy /

Troy II (Blegen et al., vol.I, Fig.369, 38/102).

Thermi IV and V (Lamb, 1936, Fig.44, 30, 6).

Simple cylindrical spit supports with horizontal perforations are known from :

Olynthus. Neolithic. (Mylonas, 1929, Fig.89a).

Eutresis. Early Helladic. (Goldman, 1931, No.266/4, p.193).

Rahkmani. House Q. (Wace and Thompson, p.43, Fig.19).

Gozlu Kule (Tarsus). Early bronze age II level. (Goldman, 1956, p.324, 442, Nos.16,17,18,19,20,21).

Karsura () (Lamb, 1937, p.).

Curious objects, possibly spit supports, were found at Hagios Kosmos (Mylonas, 1934). They stand on four legs and have a pair of horns at one end and incised, herring-bone design on the back. Mylonas compares them with similar objects from Eutresis (Goldman, p.195, Fig.267) and Mykonos. These spits appear to be neolithic or early bronze age in date and are fairly widespread in the east Mediterranean.

Objects such as the 'animal figurines' (Fig.3, 9 and 10) may, in fact, be weights similar to those from Eutresis (Goldman, No.266/7).

d. Stone

In Spain and Portugal, stone vessels and bone containers appear together in the same levels and have similar types of decoration. Thus it is necessary to discuss them together (see map VIII).

Probably the commonest type of stone vessel, apart from simple bowls or cups, is the type found in Alcala I. This usually has a rounded base and is constricted below the rim. They have been found /

found in Alcala 1,3,5,6 and 8, and Monte Velho 2 and 3, Campos, Los Millares 71, Viera and Palmela IV. The concentration of this type in the Alcala area is remarkable and may indicate that they are manufactured there.

Plain bone containers of the Cascais type which have one or more grooves below the rim are found at Vila Nova de S. Pedro, Cascais, Cova de Moura, Palmela I and IV, S. Martinho de Sintra, Agualva, Monte Abraao, Barro, and Los Millares 5. With regard to this type, the centre of distribution is certainly in the Tagus area.

A plain stone vessel from Vila Nova de S. Pedro, resembling the above type of bone container, and other decorated stone vessels which have the same basic form, were found at : Vila Nova de S. Pedro, El Carlero, Los Millares 40, and L.H. 2. Though the last example does not have the differentiation in shape between the neck and the body, the presence of grooved lines indicate that the idea of this is still present. This type is called the El Carlero type. The decoration is, in all cases, by cross hatching and they are commonest in the south of Spain.

Bone containers also have the same form and type of decoration and are called the Los Millares 5 type. They are known from Vila Nova de S. Pedro, Samarra, Gandul B, Los Millares 5, Rio de Gor 5, La Sabina 96, and fragments of possible similar vessels were found at Los Millares 40 and 7, and Los Eriales 14. The bone container from Amoreira is distinguished by the division of the ornament into panels and the container from Belas makes use of chevron ornament, while that from S. Martinho makes use of both chevron and cross-hatched ornament.

The /

The centre of distribution of decorated bone vases with simple cross-hatched decoration is undoubtedly in the south-east, but there is a western group characterised by more freedom of design.

Simple stone, or bone, vessels, with no rim and decorated by cross-hatching are known from Monte Velho (bone) and Barro (stone).

The significance of zoo-morphic stone and pottery vessels noted in the survey is uncertain and finds of them are too few to give any satisfactory conclusions.

Pottery imitations of stone and/or bone vessels were noted at a few sites but were commonest in the south-east. The pot from Cueva de la Mora, Jabugo (M.G., Pl.155, No.4) is obviously an imitation of a bone vessel of L.M. 5 type or a stone vessel of El Carlero type. The pottery vessels from the south-east resemble the Alcala type of stone vessel in shape but this may be due to their manufacture. Certainly the grooved lines below the rim and the cross-hatching betray their connection with the El Carlero stone vessel type or with the L.M. 5 bone container type. Only the pot from Las Vinas 116 is different. It resembles the Jabugo pot more in shape and makes use of vertical chevron ornament.

There are thus four main types of stone and bone vessels, each with a marked area of distribution; the Alcala type, found mainly in the Algarve; the Cascais bone container type, found mainly in the Tagus area; the El Carlero stone vessel type, found scattered throughout southern Spain; and the L.M. 5 bone container type, with its main distribution in south-east Spain. Examples of the different types are, however, found outside the main areas of distribution /

distribution and frequently in contexts of especial interest. For example, the L.M. 5 type of bone container is also found at Samarra, Vila Nova de S. Pedro, and Manzanares, suggesting that all these sites are approximately contemporary. Stone vessels of a similar type to the El Carlero type are found at Vila Nova de S. Pedro, Los Millares 40, and L.H. 2, and these sites should similarly be approximately contemporary. In the same way stone vessels of the Alcala type link up Los Millares and Palmela. At the moment all these different forms must be regarded as more or less contemporary and no typological sequence can be established. It can, however, be suggested that the Tagus group of decorated bone vessels may be slightly later than the L.M. 5 type because they show greater freedom in design.

Stone vessels are also a well-known feature of many east Mediterranean cultures, but there are no obvious parallels with the Iberian examples. A stone vessel, similar to the Cascais bone container type, is known from the Knossos neolithic (Ashmolean Museum) but is attributed to late Pre-Dynastic Egyptian cultures and, certainly, similar vases are known from Royal Tombs at Negada (Morgan, 1897, No. 628 and 654). The Spanish stone vessels are frequently said to be made of Alabaster (M.G., *passim*), but it is not known whether the alabaster was of Iberian origin, or if it was imported.

Round idols, Cylinder idols, and baetyloi seem to be inter-related and for this reason must be considered together. The Leisners contrast the distribution of the flat idol and the round idol. The former has an inland distribution and the latter is distributed along the sea coast (M.G., p. 480ff, and maps 179 and 181) and more recent finds do not in any /

any way alter this picture. The Leisners also note that all three are likely to be contemporary and it is possible that they are all manifestations of the same cult. It is important to notice that the distribution of these idols is mostly in areas affected by the colonists - south-east Spain, the Algarve, and the Tagus area.

Round idols with elaborate eye patterns are known from: Olhao, Conquero (Huelva), Sierra de Moron (Sevilla), Moncarapacho (Algarve), Huelva (Sev. Mus.), and Badajoz. They are remarkable, firstly, because they are all stray finds and, secondly, because their distribution is all in south-west Spain. The latter point is particularly interesting because phalanges and long bones, and also pottery decorated with this motif, have a mainly south-east Spanish distribution (see p.255). The custom of decorating cylinder idols with this motif continues into the Tagus area where the motif employed is very simple, consisting of two dots for the 'eyes', and two pairs of curved lines below the 'eyes'.

Cylinder idols in the Tagus area, and particularly those with a plano-convex section, may be decorated with bundles of horizontal grooves, a feature not found elsewhere. The round idol from Los Millares 57 is supplied with breasts, and appears to be unique. Two idols in Faro and Lagos Museums (see p.211) have a dotted area at one end. This is similar to feminine idols, such as the ones from Vila Nova de S. Pedro (Fig.3, 8), La Pileta and Almizaraque (Castillo, 1947, Fig.458) in which the pubic triangle is represented by dots.

A stone phallus was found in one of the Palmela graves and some also appear at the settlement at Almizaraque.

The /

The columns found inside many of the Los Millares graves, and thought by Siret to have been used for supporting the roof, may have served a ritual purpose. The forms of several columns illustrated by Leisner, (1943, Pl.87) show a remarkable similarity with the baetyloi forms. Others again are hollowed out on top and may have served as receptacles for offerings. The grave of Matarubilla also has a centrally placed stone with a hollowed-out top and other examples are known from the British Isles.

Round idols are rarely, if ever, referred to as such in publications of east Mediterranean sites. Phallic idols are recognised at several sites (Mesara - Xanthoudides, 1924; Cyclades - *ibid.*; Troy II - Schliemann, 1880, p.276-8 and p.584; Malta - Zammit, 1930, p.84) and baetyloi are sometimes referred to as such, but usually objects shaped like the Portuguese round or cylinder idols are classified as pestles. In many cases they undoubtedly are pestles, but, in some instances, these objects have flat bases with sharp edges, which suggests that they were never used for pounding. Some so-called pestles are included in the list below which is intended to show that objects similar to round idols do occur in the East.

Cyclades - pestle from a grave near Syros and finds from Amorgos (Tsountas, 1899, Fig.31, gr.268, Zervos, 1957, Pl.33 and 35).

Amorgos - stone pestle in Ashmolean Museum.

Crete - Phaistos (Pernier, 1951, Fig.250, p.382).

Hagios Kosmos - early Helladic (Mylonas, 1934, p. Fig.).

Asine - early Helladic (Frodin and Person, 1938, No.170/5).

Olynthus - neolithic (Mylonas, 1939, clay object, 89d, and marble object, 73c).

Eutresis /

Eutresis - early Helladic baetylos and pestles (Goldman, 1931, No.272 and 271, 2,3).

The above list is insufficient to enable any definite conclusions to be drawn, but it does indicate that cylinder and round idols probably do have their origin in the east, though it is highly probable that the regional characteristics were developed in the Peninsula itself.

There are other symbolic objects made from stone. Stone and ivory sandals were found at only three sites in the Peninsula: Almizaraque, Los Millares 7, and Alapraia II. They differ from each other in detail, especially in decoration, but follow the same basic idea. Their appearance in two colonies and in a rock-cut tomb, which is contemporary with the V.N.S.P. I phase is particularly interesting. The decoration on the Los Millares sandal relates it to the decoration of bone containers of the L.M. 5 type. The decoration on the Almizaraque sandal is similar to that on the comb from the sandal grave at Los Millares (grave 12). Both the Los Millares and the Alapraia sandals have perforated ridges on the underside, but in the Almizaraque example the sandal itself is perforated along the sides.

No exact parallels to these sandals are known from the eastern Mediterranean, but Maier believes that the Iberian sandals are merely another manifestation in the west of a cult typified by pendants, pottery, models of feet, or shoes (see p.95).

The plaques from Llano de la Lampera I (M.G., Pl.3, 27 and 28) may be similar to the arched, stone plaques found in graves such as Estia etc., but this is uncertain.

Croisiers which were not common in the Tagus area are more common in the Alentejo and one possible crude example was found at Los Millares 17. The other symbolic objects, common in the Tagus area, have not been found elsewhere in the Peninsula. It is also difficult to trace evidence of similar objects in the east Mediterranean

e. Flint

It was possible to establish that the tanged arrowhead was most typical of the Almeria culture. At Los Millares, on the other hand, the hollow base often with deep rounded base (Fig. 2, 21 and 22) was the most common type. The type with the deep base can be found in Sevilla (Gandul B, etc.) and in the Algarve (Alcala, Monte Velho, Nora, and Marcella) and also in La Zarcita (Huelva). It is found at Vila Nova de S. Pedro but is very rare there. It is known from a few sites such as Vila Nova de Paiva, Commenda de Igreja, Pavia and Reguengos. Its centre of distribution seems to have been in Almeria and it appears to have spread from there, becoming increasingly rarer the further west it went, except for Commenda de Igreja. In the west, and especially at Vila Nova de S. Pedro, the hollow-base arrowhead is the commonest type, it has a shallower base and, except for the mitre and the Eiffel Tower types, it is difficult to distinguish from the beaker arrowhead. Hence, it would be useless to study its distribution.

Leaf-shaped arrowheads, and its different varieties, star-shaped and bilaterally barbed arrowheads, are more common in areas on the periphery of areas influenced by the colonies, for example Valencia and Beira, than in areas dominated by the colonies, while at colonial sites, such as Vila Nova de S. Pedro and Los Millares, they are very rare /

rare. They must be related to the indigenous cultures rather than to the colonies.

With regard to the Aegean parallels, too little information is available regarding flint arrowhead types there, but hollow-base arrowheads were found at Asine (Frodin and Person, 1938, No.175, 4), Eutresis (Goldman, 1931, No.276/4), and Ithaka (Fam gr. S gr. 4 and 8 Dorpfeld, 1927) and in Lipari hollow-base arrowheads are the commonest. This evidence, slight as it is, makes it unlikely that the hollow-base arrowhead developed in Iberia from the asymmetrical trapeze. Leisners believe that the North African cultures were responsible for the introduction of bifacial, flint working into Spain. This theory requires careful consideration, though when many parallels can be seen in the eastern Mediterranean it is more natural to see bifacial working of flint as coming from that quarter also. A perusal of publications on North Africa suggests that the cultures along the coast opposite Spain are not characterised by arrowheads of exactly the same type as in Spain and Portugal.

f. Bone

Groove-headed pins were discussed in an earlier section (see p.99) and a list of them will be found on p.541. It is sufficient to say that they are typical of the indigenous cultures of Granada and the Alentejo and are very rare at colonial sites. They are probably to be dated to the V.N.S.P. /L.M. I period.

Pins with simple tubular heads are commonest in Portugal, where they are found at a variety of sites, but they are also found in south-east Spain (see list on p.542). They are less obviously allied /

allied to the indigenous group than the groove-headed pin.

Spatula-ended pins

This pin type is less common than the previous two, but it has been found at the following sites, most of which are unpublished: Vila Nova de S. Pedro, Alcala 2, Licea, Penha Verde, Chibanes, Rotura, S. Mamede, Praganca, Acebuchal, Almizaraque, Badajoz and El Morro de la Barsella. Their distribution is very interesting. The pins are found mainly in the settlements of the Tagus area, but they are also found in the colony site of Almizaraque and in an Alicante cave site, Morro de la Barsella. This confirms that the last named is partly contemporary with Almizaraque.

The other pin types are found almost exclusively at Vila Nova de S. Pedro. One of the most important of these, because of the Mediterranean parallels, is undoubtedly the vase-headed pin, which is also found at Olellas and Praganca, and the two bird-headed pins, which were found only at Vila Nova de S. Pedro. Sangmeister has already drawn attention to the bird-headed pins from Chalandriani in the Cyclades (do Paco and Sangmeister, 1956, p.225, footnote 13 - c.f. Aberg, 1933, 66, Fig.111 and Tsountas, 1899, Pl.10, 13). There is also a vase-headed pin from this site (Tsountas, 1899, Pl.10, 14), and vase-headed pins, and similar types, are also known from :

Eutresis, where they are dated to the middle Helladic period (Goldman, 1931, No.284).

Thermi, cities IV and V and the E.B.A. levels (Lamb, 1936).

Troy, first city (Blegan, No.37, 615).

Alisar /

Alisar Hüyük, copper age levels (Van der Osten, 1937).

Gözlü Kule (Goldman, 1936, p.313, Fig.438, No.50,51 and 54) possible examples.

Pins with segmented heads are known from other areas in the eastern Mediterranean but they cannot be compared with the vase-headed pin. The evidence from the pins is very similar to that obtained from a study of the fortifications and of the pottery and indicates the Cyclades and north-west Anatolia and the islands.

Bone and ivory combs were found at : Jaunton 5, Los Millares 7 (this so-called idol may be a comb), 12, 40, 74, Pena de los Gitanos (Granada), Marcella, Cabeco dos Moinhos, Samarra (Sintra), Furninha cave.

The majority of these sites can be dated with certainty to the L.M. I/V.N.S.P. I period - four in fact come from Los Millares itself. Only Cabeco dos Moinhos, Pena de los Gitanos and Furninha cannot be regarded as primary colonial sites, but they all lie in areas where influence from the V.N.S.P. I/L.M. I sites was strong and thus their presence in these areas is easily accounted for. All the combs, with the exception of Samarra, which is perforated, have small projections at the top end, presumably for easy attachment to the person (Fig.9, 9). In fact, the two projecting arms on the Los Millares 12 example are particularly elaborate. This comb also has incised herring-bone decoration. It has been compared (Siret) to Egyptian combs, but the parallel is not close. The comb from Marcella is decorated by cross hatching and thus links up with the Los Millares 5 bone container type and also with the sandals from the same /

same grave in which the elaborate comb was found. The comb from Samarra is long and slender and has a serrated edge. It is decorated by incisions down the haft. The remaining four combs are very similar and because of this are of especial interest because again they show the connection between the east and the west of the Peninsula.

Combs are known in the east Mediterranean, especially in Egypt, but there are no exact parallels for the Iberian examples.

Leisners (M.G., p.486) record finds of over 250 phalanges from south-east Spain. Of these, over seventy-six came from Los Millares and 166 from the Gaudix region (M.G., Pl.81). Many were also found at Almizaraque where decorated long bones were found also. In the west, phalanges are known only from Alcala 8, Carenque, Penha Verde, S. Martinho de Sintra, Olellas, and Bugalheira. The last three all have phalanges decorated with the eye motif. In the south-east, phalanges decorated in this way are known from Almizaraque, Los Castellones 19 and Los Millares 7, but quantities of long bones are known from Almizaraque and La Pastora, and from Ereta de Pedregal comes a horn decorated in this manner. The finds of the long bones make this decorative motif much more common in the south-east than in the west where stone idols with complex or simple eye patterns seem to take their place. The popularity of symbol pottery in the south-east has also been noted (see p.255). Thus, although early sites in both the south-east and south-west areas of the Peninsula are linked by the presence of phalanges, and the use of the eye motif, there is a distinction in the use of the motif which seems to have been more popular in the south-east in its complex form.

Maier's view on the significance of the phalanges and their connection with this motif has already been discussed (see p.95) but it is interesting to note that perforated phalanges or metapodian bones were also found at Alisar (Van der Osten, 1937) which suggests that the use of these bones may have a more Mediterranean origin than has been thought.

Childe has drawn attention to the similarity between a bone toggle from Almizaraque (M.G., Pl.28, 1, 22) and one from Troy (Schliemann, 1880, p.426, Fig.536). Unfortunately, there is no information regarding the date of the Trojan example.

g. Metal

The significance of the daggers found in Alcala 3 has already been mentioned (see p.215). The main points are: (1) that they must be early, and (2) that they are cast in a closed mould which shows advanced metallurgical techniques. The similarity between the Alcala 3 daggers and the Los Millares 57 dagger was noticed, and it was seen that the latter was possibly a copy of the Alcala 3 dagger, on account of the fact that it must have been cast in an open mould, thus showing inferior metallurgical techniques to those used for the Alcala 3 daggers.

Daggers of this type are not found elsewhere in the Peninsula, though some flint daggers, which have nicks at either side of the heel, and may be imitations of this type, have been found (e.g. at Vila Nova de S. Pedro and Los Millares and Fig.8, 5).

Daggers with mid ribs are known from the early bronze age in the east Mediterranean and frequently they have small nicks on either side /

side of the heel caused by rivet holes which have passed very close to the edge of the blade. Such types are known from:

Cyclades. Amorgos (three examples in Ashmolean Museum).

Crete. Pyrgos - an E.M.I cave deposit (Xanthoudides, 1918/19, p.136ff, Fig.15 and p.165).

Koumasa, Tekes, Herakleion. E.M.II (Zervos, 1956, Fig.290, 291, 292).

Lemnos. Poliochni IV (Brea, 1959, Fig.8).

The daggers of the Remedello culture, which also have mid-ribs, may be similarly the result of a westward movement from the east Mediterranean. There is evidence to suggest that the Remedello culture is earlier than the other Alpine cultures (Vucedol, Laibach, Mondsee, etc.) and there are certain parallels between Remedello and the Badener culture (e.g. big marble beads in the shape of a cross or a star which also occur in the Bodrokerezstur, and perforated shell plaques). The Rinaldone culture must be partly contemporary with Remedello as is shown by the marble beads, axes, daggers, and pottery, and the Gouda necropolis, with its Trojan affinities, also belongs to this phase. A rivetted dagger with a mid-rib was found there.

Finally, the dagger from the Bygholm hoard in Denmark has frequently been compared to the Alcala daggers. An examination of it, however, showed that there was no mid-rib, but the effect of one had been obtained by two grooves which have been polished into the metal. It is possible that this was done to imitate a dagger with a mid-rib.

It seems possible to trace a westward spread of the dagger with
a /

a mid-rib, which has good east Mediterranean prototypes. This spread seems to have been connected with the arrival of the first knowledge of metallurgical techniques in the different areas. These techniques, which must have been quite advanced, in Spain at least, seem to have been kept secret and eventually to have been lost because the succeeding beaker culture shows no familiarity with advanced metallurgical techniques and was characterised by hammered metal. On the other hand, the loss of this knowledge may have been due to the fact that tin was not readily available, and thus the casting of delicate objects in closed moulds was made impossible.

The axe type, found to be typical of L.M.I and V.N.S.P. I, has usually long parallel sides, the cutting edge is hammered out and the butt end is broad. This is approximately the same as the Altheim axe type in Central Europe. For the Peninsula, it is proposed to refer to this axe type as the Tagus axe, on account of its commonness in that region.

This axe type could be shown at Los Millares to belong to the first phase, and dating at other sites depends partly on this fact and partly on the fact that the succeeding beaker culture does not include metal axes in its cultural assemblage. The distribution map IX shows the interesting concentrations of axes of this type in the Tagus area, but other, less-important concentrations are to be seen in the Algarve (around Alcala) and in the south-east around Los Millares, and in Granada. The other finds are scattered over the Peninsula and, with the exception of the Madrid group, are of interest only because they show the extent of the influence exerted by the colonies. With regard /

regard to Madrid, the situation is different. Four Tagus axes are known from here. Castillo also refers to the now-vanished remains of a passage grave in this area, at Entreterminos, which yielded bell beaker (Castillo, 1956, p.450). At Guadalperal, in Caceres, another unpublished passage grave is known which, besides bell beaker, is supposed to have yielded objects typical of the V.N.S.P. I phase. These two graves could be taken as an indication of penetration up the Tagus by V.N.S.P. I people, and they may have paved the way for the Beaker people, because this route seems to have been used in later Beaker times (Ciempozuelos, etc.).

The eastern Mediterranean affinities of this axe type are indicated by finds of axes from :

Cyclades - (Tsountas, 1898, Pl.12, 7; and M.G., p.590).

Eutresis - (Goldman, 1931, No.286, 2).

E. Islands - Lemnos - Poliochni IV (Brea, 1959, Fig.9).

Lesbos - Thermi IIIb (Lamb, 1936,).

Anatolia - Alaca Huyuk (Kosay, 1944

Alisar Huyuk (Van der Osten, 1937, p.197, e.480,

d.1877, and c.2477).

Büyük Güllücek (Kosay and Akok, 1948, Pl.XCIX).

Gözlü Kule (Goldman, 1956,

Kursura (Lamb, 1937).

It is thus obvious that flat axes and adzes found in L.M. I/ V.N.S.P. I contexts and as stray finds date to this period and are brought by the colonists.

Less can be said about chisels owing to the possibility of confusing /

confusing early ones with later Argaric types. Chisels of a type found in Vila Nova de S. Pedro and Los Millares can, however, be shown from sites such as Ithaka (Dörpfeld, 1927, fam.gr.S.gr.4) and Thermi V (Lamb, 1936).

There are a group of hammered metal instruments which cannot be readily assigned to the Beaker culture because they are never found in undisputed association with Beaker pottery, nor do they form part of its known repertoire elsewhere. These implements consist principally of knives and saws.

The most interesting is the curved knife of the type found in its original bone haft at Vila Nova de S. Pedro (Fig.10, 9). That it is a knife and not a sickle is shown by the fact that the cutting edge is on the outside and not the inside of the curve. In Sangmeister's opinion, the knife was quite probably cast in a closed mould.

Similar knives, though usually less heavily made, are known from Praganca, Runa Peneda, Chibanes, Rotura, Acebuchal, Antequera and Los Millares 40, and there is possibly one from Los Eriales. They are found predominantly in settlements of the Tagus area, though there is a slight spread into Spain. They are found at sites which have good L.M. I/V.N.S.P. I relationships and most of the sites are known to have Beaker finds too.

Curved knives are not common in the Aegean and, in many cases, may actually be sickles. There is one from Kumtepe, and another similar one from Amorgos (Ashmolean Museum) though the cutting edge in the latter seems to be on the inside of the curve. They are also found at Thermi V and Eutresis. Curved knives found at Büyük Gülüçek are /

are from the Hittite levels.

The analysis of the big, Vila Nova de S. Pedro knife showed that it contained tin, and thus can scarcely be dated before the Argar culture unless it is actually made by the colonists with their advanced metallurgical techniques.

Another group of knives, which resemble the previous group, but have a less curved blade, is also distributed throughout the same area.

About thirty knives with straight sides are known. They are more widely distributed than the first two groups but are more difficult to distinguish from Beaker and Argaric types (Fig.10, 6).

A group of saws with a curved or sub-triangular blade and the serrations on the inside of the curve is known (Fig.10, 8). These have been found at Vila Nova de S. Pedro, Praganca, and Los Millares 14 and the sub-triangular saws at Rotura and Cumiera (Beira Lit.). The curved saws follow the same distribution as the curved knives, and the sub-triangular ones may be a more local type, though the numbers are too few to be able to say conclusively.

Straight one-sided saws are commoner (Fig.10, 7) and the majority are found in areas, or at sites, associated with the L.M. I/V.N.S.P. I phase.

The metal seal, found by the Leisners at Monte ^{do Cabeço} ~~Cheris~~ (Leisner, 1953, Pl.) has a good, if not a significant, parallel at Eutresis from the early Helladic period (Goldman, 1931, Pl.XX,2).

Reference has already been made to Siret's belief that the prehistoric inhabitants of Almizaraque were exploiting the nearby silver /

silver deposits of Herrerias (see M.G., p.521). No objects of silver have been found at Almizaraque or any other colonial site, but local conditions may not have favoured its preservation. The copper objects found at Almizaraque, even the axes, are almost completely corroded. Silver objects of early bronze age date are known from the Cyclades. The famous diadem from Amorgos is made of silver (Tsountas, 1898, Pl.8, 1; p.186), and a silver diadem was also found at Chalandiani in Syros (Zervos, 1957, p.28). The Ashmolean Museum possesses a fine silver bowl from a cist grave in Amorgos, together with marble idols and a Djemdet Nasr seal. On the mainland of Greece, a double spiral-headed silver pin was found at Zygouries (Blegen, 1928, p.181). The source of the silver used at this time in the Aegean area is unknown, but, if Siret is correct and the exploitation of the silver deposits at Herrerias began at this time, there is a distinct possibility that it may have come from the Iberian Peninsula.

h. Ships and sailing

Another example of east Mediterranean influence may be seen in the presence of a possible ship painted on an upright stone in the dolmen of Antelas (Oliveira de Frades, east of Aveiro) (Albuquerque, Veiga Ferreira and Viana, 1957, Albuquerque, 1959, Fig.6). This painting depicts a ship with a high prow and stern and many oars. Barnet, in a recent survey of early shipping (1958), remarks that Cycladic boats, which were designed for sailing in the open sea, have no sail and about twenty paddles. They also have a high prow. Graffiti of ships on stones at Tarxien in Malta also show ships with high prows and sterns and many oars (Woolner, 1957).

The evidence from the one grave in Portugal is too slight to draw any definite conclusions from but may be a pointer to the type of ship known to the prehistoric inhabitants of Portugal.

J. CONCLUSIONS

There can be no doubt that, despite local or regional differences, some of which may be due to the difference between grave and settlement finds, there is a remarkable uniformity between the main colonial sites; Los Millares, Almizaraque, Alcala and Vila Nova de S. Pedro and other sites in the Tagus area.

The main similarities and differences can be readily appreciated in the table on p.277 and can be verified by reference to the text (pp.241 to 276). Mesas de Asta has not been included because, with the exception of the pottery which is also distinct from the Vila Nova de S. Pedro and Los Millares pottery groups, there are few finds from the site.

Some of the differences in the Peninsula may be due to the fact that each colony had a different source in the eastern Mediterranean; other differences may have developed as the colonies became cut off from their motherland and possibly from each other. Thus the use of bone containers with criss-cross decoration in the south-east may be an early feature, because this type of decoration is known from other early objects, such as the ivory sandal in Los Millares 7 and the ivory comb from Marcella. The variety of design noticed on bone containers in the west may, on the other hand, have been a later, local development. Other differences, such as the presence or absence of spits /

OBJECT	SIMILARITIES	S.E. SPAIN	DIFFERENCES	PORTUGAL
Architecture	Fortifications with Bastions, complex entrances, and multiple lines of defence. Corbelled graves.			
Pottery	Imported pottery, similar shapes and decorative motifs. Platters.	White painted pottery. Symbol pottery.	Stroke burnished pottery, spits, supports, clay plaques.	Rock-cut tombs.
Stone	Round idols. Stone vessels, plain and decorated. Hollow-base arrowheads. Flint daggers.	Arrowheads tend to have deeper bases.		Stone cult objects common. Concentration of plain vessels in south-west Portugal.
Bone	Containers. Pins. Combs. Phalanges.	Mainly with cross-hatched decoration. Simple types and few. Phalanges frequent, sometimes decorated. Decorated long bones.	Mainly plain or with varied decoration. Bird and vase-headed pin. Phalanges rare.	
Metal	Axes and adzes. Chisels. Daggers. Knives and saws(?) Eye symbol.			
Dech. motifs		Complex motif frequent on pottery and lone bones.	Simpler motif in Tagus area more complex in south-west, found most on round idols.	
Economy	Certainly included agriculture and metal working.			

spits, vase-headed pins, or white-painted pottery, are more likely to be the result of different east Mediterranean connections.

In all areas the colonies stand out against a background of neolithic traditions, as something quite distinct. The influence of the local neolithic cultures was, however, noticeable in the regions around the colonies. In Portugal it was very noticeable in the Tagus area, which is precisely the area which was most influenced by the colony site of Vila Nova de S. Pedro. In the south-east, however, less influence from the neolithic cultures was noticed in the immediate vicinity of Los Millares, but there was a strong nucleus of neolithic traditions in the Guadix region. Other areas of the Peninsula which were further from the colonies seem to have been settled for the first time, for example, the region of Beira and Salamanca where dolmens begin to appear; or to have taken over the idea of dolmen building perhaps as a result of a new influx of people from dolmenic areas, for example, the dolmen culture of Cataluna; or the final possibility is that the local neolithic cultures continued to exist in the areas, but were in some sort of contact with colonial sites, for example the caves of Valencia.

The colonies can be shown to be independent of the local neolithic cultures. They can also be shown to have good east Mediterranean contacts. From the survey above (pp. 241 to 276), the importance of the Cyclades, the west Anatolian Islands and Anatolia, especially, was clearly seen. It would probably be wrong to regard any one of these areas as being responsible for the planting of all the colonies in the Iberian Peninsula and it is highly probable that each /

each of the main sites in the Peninsula was colonised from a different area in the eastern Mediterranean. The possibility that Mesas was colonised from the western Mediterranean Island, and possibly from Tigani, in Samos, itself is a fairly strong one, though this would make it very early. The closest parallels for Vila Nova de S. Pedro were, however, to be found in the Cyclades. The east Mediterranean parallels for Los Millares were less easy to trace to one particular area, but there are obvious contacts with the Cyclades, and it must also be remembered that the earlier Almeria culture was characterised by Cycladic type idols.

Communications would certainly seem to be, as the Leisners point out, by sea, and not overland, and most of the colonial sites are in good positions as ports. Even Los Millares, which is 20 km. up the River Andarax, could probably have been reached by river in early bronze age times (see p. xix), and Vila Nova de S. Pedro, which is only 10 km. from the Tagus at the present day, may have been more readily accessible in the early bronze age. The indigenous inhabitants of south-east Spain, especially Granada, seem to have had overland communications with central Portugal, especially the Alentejo, and the probable routes used have been discussed by Leisners.

It is particularly interesting that the closest parallels for the Iberian colonies should be with the Cyclades and the west Anatolian Islands, because sailing would have developed here of necessity, and the inhabitants of these areas were probably the only people capable of undertaking long sea voyages, such as would be necessary to reach Spain. Even in Homer's time, a voyage through the Mediterranean was not /

not regarded lightly. There is always a possibility that early ships were blown off their course, reaching Spain in this way, though the organised nature and size of the settlements in the Peninsula is an argument against this suggestion.

There is evidence in the East for close contact by sea between the Cyclades and Anatolia (e.g. Yortan type jugs in the Cyclades), while on the Greek mainland, at Hagios Kosmos, considerable Cycladic influence has been noted (Mylonas, 1934), which shows that the early inhabitants of the Cyclades had developed an interest in overseas trade and perhaps too, in possessions. Cycladic shipping too, as Barnett (1958) has pointed out, was developed for sailing on the open sea and not for river transport.

It is at first sight surprising that this phase is not noticeable in Sicily, Lipari or Malta. This may be due to the fact that ships preferred to sail along the continuous coastline of North Africa rather than risk the broken coastline of the north Mediterranean. Little evidence to confirm this supposition may be expected because ships bound for either end of the Mediterranean would only require to stop en route long enough to take on fresh supplies of water, and to allow the crew and passengers some exercise. Another reason why the route along the north African coast was preferred may have been to avoid the possibility of piracy on the part of the inhabitants of the central Mediterranean islands, which could arise if they learned that richly laden ships were passing close to their shores.

It is possible to think of the L.M. I and V.N.S.P. I phases as being divisible into two, consisting of a first phase of colonization, when /

when the colonists would still be in contact with the east Mediterranean, and the colonies were vital centres of commerce and industry, and a second phase, when contact with the East was lessening and had probably come to a halt and the colonies were probably in closer contact with the indigenous people. The evidence for this, however, is not sufficient to allow one to sub-divide the V.N.S.P. I period into two phases with any certainty.

The existence of the colonies seems to have been curtailed by the Beaker folk. At Vila Nova de S. Pedro, there is evidence for a destruction above which the pottery is principally Beaker ware. At S. Mamede and Praganca a similar destruction can be inferred. At Alcala, grave 4 shows Beaker affinities and, in the south-east, beaker ware is known from both Los Millares and Almizaraque. The Beaker domination of the south-east seems to have been less intense than its domination of the Tagus sites, and it is possible that Los Millares fell into gradual decline. The evidence available indicates that Los Millares did not survive into Argaric times, but the dolmens of Granada, which were built by the indigenous peoples, do contain Argaric finds and thus seem to have been in use from L.M. I times until late into Argaric times (Argar B).

It is most probable then that Spain and Portugal were first colonised from the west Anatolian Islands and the Cyclades. With regard to the date of this colonization, it is likely to have taken place while herring-bone design was popular, and before the full development of the typical Cycladic spiral pattern, that is, approximately before the beginning of E.C. II, which is dated to about 2,400 B.C. (Matz, 1950). Sangmeister (do Paco and Sangmeister, 1956 /

1956, p.229) independently obtained a similar date for the beginning of the settlements at Los Millares and Vila Nova de S. Pedro.

A sample of carbon, found behind the settlement wall at Los Millares, was dated by Carbon 14 to 2345 \pm 85 B.C. This carbon was found below tumble from the settlement wall and so the date obtained cannot be regarded as the date for the beginning of the settlement.

The find of pattern-burnished ware at Mesas de Asta makes it probable that it is earlier than the other colonies in the Peninsula, and if the parallel with Tigani in Samos, the dating of which depends on the date for Troy I (about 2,700 B.C.), is correct, the site must be dated to about 2,700-2,600 B.C. In this respect it is interesting to note that Brea's date for the beginning of the Diana culture, which has similar red monochrome pottery, is about 2,650 B.C. (Brea, 1956, table opp. p.98). Mesas shows little contact with the other colonial sites and may well be the earliest in the Peninsula, followed by Vila Nova de S. Pedro, Los Millares, etc. some time later. Contact with the east Mediterranean may have been continued in the period between the beginning of Mesas and the beginning of Los Millares and Vila Nova de S. Pedro as is suggested by the finds of flat idols in the Almeria culture.

In conclusion, it can be stated that Mesas is probably the earliest colony in the Peninsula and, on the basis of east Mediterranean parallels, must be dated to about 2,700-2,600 B.C. The establishment of Vila Nova de S. Pedro and Los Millares may be dated to about 2,400 B.C. or earlier but contact was maintained between the east and west Mediterranean in the intervening period, as is shown by the presence of flat idols in the Almeria culture.

CHAPTER THREE. THE BELL BEAKER CULTURE

A. INTRODUCTION

The bell beaker is a name given to a type of pottery which is found recurring in amazing uniformity in most countries of west and central Europe. It is frequently regarded as originating in Spain and for this reason it gives rise to a very important chapter in the development of the early bronze age in the Peninsula. Its very distribution, however, takes it beyond the main scope of this thesis and only the main problems can be considered here.

Beakers are generally considered to fall into four main types - maritime, meseta, carinated and bowls.

The maritime beaker, sometimes referred to as the pan-European beaker, has an S profile and a rounded base. The pottery is usually relatively thin-walled and is well fired. The surface, which is burnished, is often red in colour. The decoration is very characteristic and consists of decorated bands alternating with plain bands of equal width. Decorative motifs used in this group include parallel lines (vertical, horizontal and oblique), cross-hatching and lozenges, but zigzags are rare. There is a special group of pottery referred to here as the true maritime beaker, which is characterized by the use of hyphenated ornament arranged in parallel oblique lines which alternate direction in each decorative zone (Fig.11, 6).

The meseta beaker is more squat than the maritime beaker, and the decoration is divided into two distinct zones, one below the rim and one on the body of the pot (Fig.11, 7). Less often, there is a third zone of decoration around the base.

The carinated beaker is found in various dimensions but it has a marked shoulder and neck. The decoration is usually divided into two zones, of which one is situated just below the rim and the other on or below the shoulder (Fig.11, 9).

The beaker bowl is a simple hemispherical bowl, usually with one or sometimes two zones of decoration below the rim (Fig.11, 8). Some bowls have broad, flat hammer-type rims which are decorated. These are referred to as Palmela bowls.

B. THE SITES AND FINDS

The information regarding Iberian beakers has been reduced here to tabular form for easy reference. Full information regarding the sites and the pottery is readily available in Castillo (1928 and 1947) and Leisner (1943). A further bibliography for sites not found in any of these publications will be given at the end of the tables.

In some cases it was not possible (for a variety of reasons) to assign sherds to any particular type of beaker. They have been indicated in the table by a question mark but they have not been included in the discussion following the tables. Sites at which beaker ware was especially common have been indicated by an asterisk. For the purposes of the table, the different varieties of tanged daggers and v-perforated buttons have been ignored. They will be considered in the discussion. The term Palmela point refers only to the leaf-shaped tanged metal points; no barbed and tanged points have been included.

The circumstances of the finds, whether an earth grave or a cave, etc., are indicated by an initial letter.

Sites about which no adequate information is available have not been included in the table. This refers to sites mentioned by Almagro (1958, Fig.13), Leisner (1955, p.22) and Castillo (1928, p.51). In other cases, sites have been omitted because it was considered that the pottery illustrated was not typical beaker ware, for example, San Isidro, Madrid, and Berrueco (Castillo, 1928, Pl.XXIII, XXIV, XXV), Puig Rodo (Pericot, 1950, Fig.44), and Llano Manzana 4, Los Millares 22 and Llano Teja 16 (Leisner, 1943, p.454 and Pl.28,3; 22,1; 46,16).

The following are the abbreviations used in the table :

under type of site:

- C - Cave
- T - Corbelled grave
- D - Dolmen
- E - Earthgrave or cist
- R - Rock-cut tomb
- A - Round grave of Almeria culture
- S - Settlement

under finds:

- MES - Meseta type beaker
- MAR - Maritime type beaker
- CAR - Carinated beaker
- Bowl - Beaker bowl
- TD - Tanged dagger
- VB /

VB - V-perforated button

PP - Palmela point

HA - Hollow-base arrowhead

Br - Bracer

G - Gold .

An asterisk after the name of the site indicates that the beaker pottery was very abundant at that site.

TAGUS AREA (Contd.)

Site	Type	MES	MAR	CAR	Bowl	TD	VB	PP	HA	BR	G
Monge	T		x		x						
Agualva	T		x	?	x		x		x		
Arruda 2	T			?	x		x		x		
Mutelas	T		x					x			
S. Martinho de Sintra	AT				x		?	?	x		
Monte Abraao	D				?		x		x		
Casal do Penedo	D		?	?	x				x		
Negrais	C			x	x						
Cascais	C			x	x				x	?	
Ponte da Lage	C			x	x	x		x	x		
Furadouro	C			x							
Cova da Moura	C			x				x	x		x
Carvalhal	C			x							
Alcobaca	C			x							
Eira Pedrinha	C		?		x				x		
Estoril	S		?		x						
Alpiarca	?				x						
Cabeco dos Moinhos	D				x				x		

GALICIA

Vilavela	D?		x								
	E?					x		x			x

S.W. SPAIN and PORTUGAL /

CENTRAL SPAIN (Contd.)

Site	Type	MES	MAR	CAR	Bowl	TD	VB	PP	HA	Br	G
Vallecas	?		x								
Las Carolinas	?				x						
San Isidro	?	x									
Entreterminos	D or T		x								
Miguel Ruiz	E		x				x				
Algodor	?				x						
Burujon	?				x						
S. Fernando de Henares	?		x								
Jarama	?		x								
Mejorado del Campo	E?			x			x		x		
Samboal	E	x		x							
Tarrascona	C		x	x	?						
Sanibanez	C?	x			x						
Aldea Vieja de Tormes	D		x				x		x		x
Terinuelo	D		x								
Guadalperal	T	x		x	x						

Sites which are not readily available in publications by either Castillo or the Leisners are listed below. Sites which are unpublished are indicated by a 'U' and the name of the museum in which the finds are kept.

Parede (do Paco, 1957).

Esparqueira (U. Etnol. Mus. Lisbon).

Licea (Ribeiro, 1878).

Praganca /

- Praganca (U. Etnol. Mus. Lisbon).
- Montes Claros (Jalhay, do Paco and Ribeiro, 1945; Jalhay and do Paco, 1948; do Paco and Bartholo, 1957).
- Penha Verde (Zbyszewski and Veiga Ferreira, 1958).
- Olellas (Cunha Serrao and Prescottt Vicente, 1958).
- Alapraia (Jalhay and do Paco, 1941; do Paco, 1955).
- S. Pedro de Estoril (Nunes, 1948, and Junta de Turismo de Cascais, 1946).
- Carenque (Heleno, 1933).
- Ermegeira (Heleno, 1943).
- Quinta das Lapas (U. Etnol. Mus. Libson).
- Agualva (Veiga Ferreira, 1953).
- Arruda (Veiga Ferreira and Trindade, 1956; Trindade and Veiga Ferreira, 1956).
- Monte Abraao (Ribeiro, 1878).
- Negraais (Cunha Serrao, 1958).
- Casal do Penedo (Vaultier and Zbyszewski, 1951).
- Casas do Canal (Leisner, 1955).
- Cascais (do Paco, 1942).
- Ponte da Laga (U. Geol. Mus.).
- Furadouro (Apollinario, 1897).
- Cova da Moura (U. Torres Vedras Mus.).
- Carvalhal (U. Geol. Mus. Lisbon).
- Alcobaca (Vieira Natividade, 1901).
- Eira Pedrinha (Mendes Correa and Teixeira, 1949).
- Estoril (do Paco and Vaultier, 1943).
- Cab. dos Moinhos /

Cab. dos Moinhos (Santos Rocha I, 1889).
 Badajoz (U. Mus. Ciencias Nat. Madrid).
 Marchena (Gomez Moreno, 1933).
 Mesas de Asta (Esteve Guerrero, 1945 and 1950).
 Cordoba (U. Mus. Arqu. Cordoba).
 Fuente Palmera (Sangmeister, 1957).
 Almizaraque (U. Mus. Arqu. Nac. Madrid).
 C. Ambrosio (Jimenez Navarro, 1946).
 Retortet and Recambra (Gurrea Crespo, 1954).
 Sant Olaguer (Serra Rafols, 1950).
 Mejorado del Campo (U. Santa Olalla's priv. collection).
 Samboal (Molinero, 1954).
 Guadalperal (Leisner and Sangmeister - forthcoming).

C. ANALYSIS

The following analysis is based on the material presented in the previous tables. In a later section the views of other archaeologists on the origin and development of beakers will be discussed, and all the available evidence for the different theories will be examined.

a. Beaker distribution patterns and general considerations

The table below is an analysis of the distribution of the different beaker types among the different types of sites at which beakers have been found. The percentages are the percentages of each beaker type found in any grave or settlement type. Thus
 fifteen /

fifteen out of fifty-five bowls were found in caves = 26%. This table includes only sites which can with certainty be classified into caves, dolmens, etc.

TABLE A

	MES		MAR		CAR		Bowl		Site Total
C	2	33%	7	16%	10	27%	15	26%	30
T	1	17%	9	20%	3	7%	8	12%	15
D	-	-	10	23%	2	4%	5	8%	19
E	3	50%	5	10%	6	15%	2	2%	14
R	-	-	4	9%	6	15%	10	17%	10
A	-	-	2	4%	-	-	1	1%	3
S	-	-	8	18%	9	32%	14	24%	15
Pot									
Total	6	100%	43	100%	36	100%	55	100%	106

From this table it will be appreciated that in the Peninsula beakers may be found in any grave type. It is interesting that all beaker types are found in relatively high proportions in caves. The beaker bowl and the carinated beaker are in fact most frequently found in caves and settlements. The maritime beaker type is, however, commonest in dolmens and corbelled graves. Bowl types are least common in earth or cist graves, carinated beakers in dolmens or corbelled graves, and maritime beakers in rock-cut tombs.

The next table shows the geographical distribution of the various beaker types. The percentages are calculated from the number of sites with a beaker type and the total number of sites in the area. Thus fourteen sites with maritime beakers from a total of thirty-nine sites /

sites in the Tagus area gives 36%. All classifiable beakers are included in this table (and in succeeding tables) irrespective of whether their find circumstances are adequately known.

TABLE B

Area	Type								Total no. of sites
	MES		MAR		CAR		Bowl		
Tagus	-	-	14	36%	22	56%	33	85%	39
S.W.	1	7%	4	28%	7	50%	7	50%	14
S.E.	-	-	12	52%	1	4%	8	35%	23
N.E.	2	8%	14	58%	1	4%	8	33%	24
Central	5	26%	8	42%	7	37%	7	37%	19
Total Types	8		52		38		63		119

Four distribution maps based on these percentages are shown in map X. This indicates that the centre^{of} distribution for the meseta beaker is in the central area of Spain, but it shows penetration into south-west Andalusia and Cataluna. The maritime type shows a remarkable concentration in the north and east of the Peninsula. The carinated type is found chiefly in the Tagus area and in south-west Andalusia, with penetration into central Spain. The bowl type is very common in the Tagus area and shows a similar distribution to the carinated beaker in south-west and central Spain.

A series of percentages worked out for the proportion of the number of examples of any type in any area against the total number of examples of that type in the whole Peninsula gave results which were very similar to those presented in table B. The only difference was /

was that the maritime type was shown to be as common in the Tagus area as on the East coast.

The distribution of find spots of the maritime beaker is shown in map XI. The true maritime beaker (represented by the dark blue spots on the map) is found predominantly in the west of the Peninsula at sites such as Vila Nova de S. Pedro, Alapraia II, Rotura, Chibanes, Praganca, Vilavela, but it is also known from Entreterminos and Filomena.

Castillo (1956) has shown that maritime beakers decorated by cord ornament have been found at eleven sites in the Peninsula (represented by black spots on map). Seven of these sites are in the north-east area, one is in Valencia (Filomena), two are in Basque country and one is in central Spain (Entreterminos). He has been able to distinguish seven main motifs with which cord ornamentation has been employed, all of which are variations on the true maritime beaker motifs (see Pl.39). The cord ornamentation is usually restricted to a single or double line bordering bands which are decorated by hyphenated ornament. They cannot be compared to the cord-zoned beakers of north-west Europe.

There are some maritime beakers which have hyphenated decoration arranged in the same patterns as the cord-ornamented pottery. They are :-

- Alapraia: Castillo style 6.
- Monge: Castillo style 2?
- Penha Verde: Castillo style 4.
- Vilavela: Castillo style 4.
- El Acebuchal: /

El Acebuchal: Castillo style 4.

Cueva de la Hacha: Castillo style 3.

Solanells: Castillo style 4.

A small flat-bottomed bowl, not related to beaker ware, was found at Praganca. It is also decorated by hyphenated ornament arranged as in Castillo's style 2.

Lozenge ornament is found on two maritime beakers from Solanells and Aigues Vives. The maritime beakers from Solanells also have flat bases. Zigzag ornament is uncommon in maritime beakers.

Some beakers from Cataluna were not classified as maritime types because the decorated zones were not separated by plain zones, even though the decoration was arranged in narrow horizontal bands (e.g. Cartanya, Castillo, 1928, Pl.LXX).

The meseta beaker was often difficult to distinguish from the smaller carinated beaker which also has two zones of decoration, but it has a rounded profile which is characteristic (map XII).

The carinated beaker's typical ornament probably consisted of zigzags and cross-hatching. A beaker from Carvalhal cave in Portugal was, however, decorated by lozenges (map XII).

The Palmela form of the beaker bowl (i.e. with flat, decorated rim) was found only in the west and south-west of the Peninsula. It was found at Rotura, Chibanes, Licea, Olellas, Ermegeira, Montes Claros, Furadouro, Alapraia, Palmela, Monge, Alpiarca, S. Martinho, Negrais, Cascais, Ponte da Lage, Cova da Moura, Eira Pedrinha, Mesas de Asta, Acebuchal, Vaquero, Carrascal, Canada Honda B and Soto I. The bowl form with the undecorated rim is common in all the beaker areas of Spain (map XIII).

The beaker bowl from Alpiarca (to the north-east of Santarém) is of particular interest because it was found in an urnfield cemetery! Mendes Correa, who published the site, considers this an indication of the survival of beaker ware until urnfield times. At the same site an undecorated footed bowl was found which is similar to a footed bowl found in Gruta de Porto Covo (do Paco and Vaultier, 1956) and to a decorated beaker bowl from S. Pedro de Estoril. In view of this, it is possible that the beaker ware was the remains of an earlier burial at the same site.

A curious feature of Iberian beakers is the presence of fine omphalos bases, often combined with basal decoration, at many sites in the Peninsula. Decorated bases alone are also common and in some cases the decoration leaves room for an omphalos which was never made (e.g. Leisner, 1955, Pl. XII and XIII). The figures regarding the distribution of decorated and omphalos bases between the different beaker types in the various regions are given in the following table in which the percentages are calculated from the number of omphalos bases in any beaker type in any area and the total number of finds of that type in the same area. For example, seven out of twenty-two carinated beakers in the Tagus area have omphalos bases = 31%.

TABLE C

Area	MES		MAR		CAR		Bowl		Total
Tagus	-	-	2	14%	7	31%	5	15%	14/39
S.W.	1	100%	-	-	4	57%	1	14%	6/14
S.E.	-	-	1	8%	-	-	1	12%	2/23
N.E.	2	100%	3	21%	-	-	5	62%	10/24
Central	1	20%	-	-	2	28%	5	71%	8/19
Total	4		6		13		17		

This means that 66% of all the meseta beakers have basal decoration.

14% of all the maritime beakers have basal decoration.

36% of all the carinated beakers have basal decoration.

31% of all the bowls have basal decoration.

The high percentage gained for the meseta beaker may be partly due to the low figures involved - 4/6.

With regard to the percentage of sites in each area which have this type of decoration, the figures are as follows :-

TABLE D

Tagus	35%
S.W.	42%
S.E.	8%
N.E.	41%
Centre	42%

It will be readily appreciated that the use of basal decoration is commonest in a zone which crosses the Peninsula diagonally from north-east to south-west.

Hyphenated and incised decoration is found on all types of beakers.

The beaker bowl is decorated exclusively by incised ornament in the north-east and centre of the Peninsula. In the south-east there are a few examples of hyphenated ornament. In the south-west and Tagus area the decoration is predominantly hyphenated, though incised decoration is also found.

Incised ornament is commonest on the carinated beaker in the centre, north-east and south-east of the Peninsula, and hyphenated ornament predominates in the west and south-west.

The /

The meseta beaker is with one exception (Ecija) decorated by incised ornament.

The maritime beaker is commonly decorated with incised ornament in the south-east, but incised decoration is also relatively common on maritime beakers in the Tagus area (Chibanes, Carenque, Montes Claros, Alapraia II and Mutelas). Hyphenated ornament is found almost exclusively on maritime beakers in the north and north-east, centre and south-west and it is also common in the Tagus area and the south-east.

The custom of filling the incised or hyphenated design with white paste (known as incrustation) is found in the Peninsula especially at Ciempozuelos (Castillo, 1928, Pl.XIV-XX) and Acebuchal (Castillo, 1928, Pl.IX).

b. Associated finds

Tanged daggers were found in association with beakers at thirteen sites. Table E below shows the number of times it was associated with the different beaker types. It should be noted that at any one site two or three beaker types might be present.

TABLE E

Area	Dagger Total	Assoc.			
		MES	MAR	CAR	Bowl
Tagus	3	-	2	3	3
S.W.	3	-	2	3	2
S.E.	2	-	2	-	1
Cataluna	1	-	?	-	-
Central Sp.	4	1	2	2	1
Total	13	1	8	8	7

A comparison of these figures with the figures for the total number of beaker sites in the area or the total number of each beaker type shows little conclusive evidence. The dagger is found most commonly in the south-west and centre of the Peninsula (21% and 20%) and is very uncommon in the east (5% in north-east). It is most commonly associated with the carinated beaker (21%) but is found in only slightly lower percentages with the other types (16%, 15% and 11%) (map XIV).

The Palmela point (Fig.11, 4-5) has a predominantly western distribution as can be seen on map XV. It was found associated with beaker ware at sixteen sites. The information regarding it is laid out in the same way as the dagger table.

TABLE F

Area	P.P. Total	MES	MAR	CAR	Bowl
Tagus	9	-	4	6	8
S.W.	1	-	1	1	1
S.E.	3	-	2	-	2
N.E.	1	-	-	-	1
Central Sp.	2	-	1	1	-
Total	16	-	8	8	12

Comparison with the beaker figures of each area and each type shows that the point is commonest in the Tagus area (c. 23%) which merely confirms the distribution map and it is found almost equally commonly with the carinated beaker (21%) and the beaker bowl (19%).

The /

The information regarding v-perforated buttons is presented in tabular form below :

TABLE G

Area	Total	MES	MAR	CAR	B
Tagus	9	-	4	3	8
S.W.	-	-	-	-	-
S.E.	2	-	1	1	2
Cataluna	7	1	2	1	3
Central Sp.	-	-	-	-	-
Total	17	1	7	4	13

They are found associated with beakers at 29% of the sites in Cataluna and in 25% of the sites in the Tagus area. They are most commonly associated with bowls (20%) but are found almost equally commonly with the other beaker types.

The v-perforated buttons can be divided into three main types, the distributions of which are shown on map XVI. The commonest type, especially in the north-east, is the prismatic or pyramidal button (Fig.11, 11,14). The 'tortuga' button, so called because of its likeness to a tortoise (Fig.11, 12-13), is found mainly in the Tagus area, but also as stray finds in the south-east. The third type is the simple conical button (Fig.11, 15). The only prismatic button found in the Tagus area is from Vila Nova de S. Pedro where it was associated with a bronze axe of Argaric date and a chisel. A catalogue of the sites, at which v-perforated buttons have been found, is given at the end on p.501.

Hollow-base arrowheads are confined mainly to areas where they were /

were common in V.N.S.P./L.M. I times. They are not found in north-east or centre of Spain where they were also rare in the previous period. Their place is taken on the east coast by barbed and tanged arrowheads.

Gold has been found associated with beaker ware at the following sites: Ermegeira, S. Pedro de Estoril, Palmela, Cova da Mora, Aldea Vieja de Tormes, Canada Honda G, Carrascal, Belmonte I, and Villar del Campo. In most cases the gold is present in very small quantities and often it consists of a twisted piece of foil. The grave of Alcala 4 should probably be included here because, although no beaker ware was found, there are pieces of gold foil and a Palmela point. The gold finds will be considered together in a later chapter and it is sufficient to note here that gold is often found with beaker ware and with Palmela points and tanged daggers.

Summarizing this section on associated finds, it can be said that few significant associations can be established for any beaker type. None of the types can be shown to be later or earlier than the other types; in fact, all the types seem to be in all the areas during the same period of time. The difficulty of eliciting information from the beaker sites is partly due to the fact that the majority of beakers are found in graves where collective burial was practised. There are, however, fourteen graves in which single burial seems to have been practised and these were examined with the hope of finding some significant features. The table below summarizes the information gained. It should be noted that the figures in the table and following discussion refer only to finds associated /

associated with beakers.

TABLE H

Area	MES	MAR	CAR	Bowl	TD	VB	PP	G	Total
S.W.		2	2	1	2		1		3
S.E.		1							1
N.E.	1	2			1	2			5
Centre	2	1	4	1	3		1	1	5
Total	3	6	6	2	6	2	2	2	14

This showed that in the centre 26% of the sites were cists.

in the north-east 21% of the sites were cists.

in the south-west 21% of the sites were cists.

(The percentage for the central area would be even higher if calculated from the number of sites at which the grave type was known - twelve, instead of from the total number of sites - nineteen. The percentage out of twelve would be 42%.) The distribution of cist graves from north-east to south-west corresponds with the distribution of omphalos and basally decorated beakers (see p.300) which are in fact frequently found in cist graves.

The commonest beaker type in cist graves is the meseta type (50%) and the carinated beaker (17%). Of the maritime beakers, 13% are found in cist graves but only 4% of the beaker bowls. This may be an indication that there is a chronological (or cultural) difference between the bowl and the carinated beaker.

Nearly 50% of the tanged daggers are associated with cists and 19% of the gold, but only 12% of the points and v-perforated buttons are found in cists.

Gold /

Gold and/or Palmela points and/or tanged daggers are relatively commonly associated in cist burials - for example Vilavela, Quinta da Agua Branca, Montilla, San Bento de Balugaes, and El Argar. (See p.454 for full discussion).

D. DISCUSSION

a. Summary of views held

It will be appreciated from the foregoing that the position with regard to beakers in the Peninsula is very complex. Because of this, it has been considered best to begin the discussion on beakers with a summary of the present theories held on the distribution and relationship of the various beaker groups.

Outside Spain the following bell beaker groups are recognised :

1. North Africa (see Tarradel, 1955, 1957-8, also Forde-Johnston, 1959, p.100-101).
2. South France and Brittany (Castillo, 1928).
3. Italy: Sardinia, Sicily, and N. Italy (Castillo, 1928, and Acanfora, 1956).
4. Central Europe: Bohemia and Moravia (Stocky, 1926, 1928; Rzehak and Cervinka, 1928), Central Germany (Neumann, 1929), Silesia and Poland (Seger, 1934), Austria (Tompa, 1937), Bavaria (Birkner, 1936) and Rhineland (Gateman, 1943, and Sangmeister, 1951).
5. Holland (V. der Waals, 1955).
6. Great Britain (Abercromby, 1904, Piggott, U.).

Until /

Until 1926, when Bosch Gimpera made the first attempt at analysing the bell beaker culture in central and western Europe (Ebert, Reallexikon, 1926), any discussion or study of the bell beaker culture had been on a purely regional basis. The first detailed study of the different beaker groups in Europe was made by Castillo in his book "La Cultura del Vaso Companiforme" published in 1928. More recent publications by the same author indicate that he still adheres to the views put forward in 1928. These may be summarized as follows :

The eight Spanish beaker groups which he distinguished in 1928 can be reduced to three main groups :-

1. Maritime Beaker (Andalucia, Almeria, Levante, Galicia and Portugal).
2. Meseta group (Old and New Castille).
3. Mixture of both groups (Cataluna Nueva and the Pyrenees).

He believes that beakers originated in the Guadalquivir valley from the local cave cultures. From Andalucia the meseta beaker culture spread to New and later to Old Castille. The maritime beaker also originated in Andalucia and gave rise to the Portuguese and Almerian groups. The beakers of Cataluna Nueva and the Pyrenees owe their origin to streams arriving from the Almeria and the meseta groups but in the Pyrenean group Almerian influence is dominant. Galician beakers are related more to the Pyrenean group than to the Portuguese group. Castillo believes that the route taken by the beaker culture to central Europe was from Almeria to Sardinia, north Italy and south Germany via the Brenner Pass (Castillo, 1928, p.18).

As a result of their study of the megalithic graves of south Spain /

Spain, the Leisners (1943) were able to point out that at Los Millares beaker ware arrived at the end of L.M. I and lasted into the L.M. II phase. This conclusion was based on the fact that the beaker in grave 18 at Los Millares was similar to another in grave 6 of Atalaya, which was found in the same grave as a broken axe of a type which they would assign to phase Ic at Los Millares. The fact that a Palmela point was also found in this grave confirmed their theory that this tomb was contemporary with the second phase at Palmela, but, since there is no evidence that the beaker, the axe or the Palmela point are in any way contemporary in the grave, this particular argument cannot be maintained. The evidence obtained from a survey of the Los Millares graves in chapter two does, however, show that the Leisners' theory was basically correct.

In west Andalusia the evidence was clearer. Beaker burials in megalithic graves were later in date than the primary burials which could be dated to the L.M. I period. The Leisners were also inclined to believe that hyphenated decoration was earlier than the use of incised decoration. They regard the bell beaker as the product of a separate and intrusive group of people.

In 1950 Savory published a note in which he delimits two groups of beaker pottery. The first is characterised by hyphenated ornament, the second by incised decoration. According to him, the two decorative techniques belong to separate though related groups of people and represent two phases of beaker migration into the Peninsula. Smith (1953, p.104-5) criticises this view. Smith points out that any arrangement of beakers in a series has always been /

been derived from a general interpretation of the period: she argues that there is no evidence to suggest that there was a beaker folk. She considers that the Tagus mouth, especially the Palmela region, was the area from which all the beaker ware in the Peninsula diffuses, because in this area all the beaker types are found, as well as the objects usually associated with beakers, such as tanged daggers, v-perforated buttons, bracers and gold objects. In conclusion she infers that the Palmela group was probably immigrant. The earth graves at Filomena and the Beaker group near Arles in south France could, she thinks, have arrived independently from the same original centre (wherever that might be).

The most important recent study of Beaker groups has been made by Sangmeister (Hab. and forthcoming (b)). He believes that beakers fall into two main groups, a western or maritime group, characterised by horizontal bands of decorated and undecorated zones, and a meseta or continental group characterised by wider bands of incised ornament often divided into two zones which are found on the neck and on the body of the pot. He was also able to list certain features which appear constantly in association with bell beakers, many of which were unknown in central Europe before beaker times. These will be discussed later.

A brief summary of Sangmeister's views on the development of the bell beaker cultures in central Europe is given below.

The earliest group is in Bohemia and Moravia (i.e. continental group) which has close parallels with the Ciempozuelos group (meseta beaker, bowl, incrustation, decoration arranged in two zones, a tanged dagger /

dagger and single burial in an earth grave) and for this reason may be considered as arriving straight from Spain. In Bohemia the bell beaker adopted the handle. Handles are probably connected with the Baden culture though ultimately the fashion goes back to the east Mediterranean area. They should be regarded as a fashion which spread rapidly northwards, without any associated culture or cultural significance. Sangmeister distinguishes three stages in the adoption of handles by beakers. In the first, the handle looks out of place as though it had been stuck on, in the second phase, the handle and the beaker go well together and in the third phase, the handled beaker emerges which shows little evidence of its origin. This last form is frequently found with small triangular rivetted daggers, which indicates contemporaneity with Aunjetitz or Reinecke A 1 (Sangmeister, 1951). Handles beakers of stage I are found only in a restricted area of Bohemia and Moravia; those of stage II appear in Bavaria, Austria and partly in Hungary and Silesia; and beakers of the third stage are widely distributed in central Europe and the Rhine valley where they meet groups of the western or maritime bell beaker which have come up the Rhine.

The central German bell beaker has characteristically two zones of decoration. The design is very often arranged in the so-called metope pattern. Chalices, footed bowls and handled bell beakers also occur, together with wristguards. Burial is in flat earth graves containing crouched skeletons, but in Thuringia the bell beaker culture took over the custom of burial in stone cists.

The western group of bell beakers are descendants of the Spanish maritime /

maritime type which arrived in the Rhineland by sea from Spain; in this group decoration may occur on the inside of the rim. No grave form is known and beakers tend to occur in all types of graves.

The Rhine beaker culture with its centre at Worms in the area between Mainz and Frankfurt is characterised by flat graves usually with a north-south orientation. The grave type must have come from the central German group but the beakers are descendants of the maritime type. The Rhine beaker group forms the basis of the Adlerberg culture.

With regard to the origin of beakers, Sangmeister agrees with Bosch Gimpera and Castillo that they must be derived from the cave cultures. He considers, however, that the maritime beaker originated in the cordial ware groups and the meseta beaker in the impressed ware cultures of inland Spain; and that the decisive factor in its development was the contact between the impressed ware cultures and the copper-using colonies. He thinks that this contact took place as the people from the colonies moved inland, searching for copper ores. According to Sangmeister, the contact zone should be sought in the area around Carmona because the southern boundary of the cave cultures lies in the Cordoba area and the Guadalquivir valley is the home of a strong megalithic culture. It is unfortunate that the finds from Carmona were badly excavated and published. At Carmona all bell beaker cultural elements may be found and both bell beaker types occur together. Sangmeister believes that the bell beaker developed along the following lines. In central Spain and the Guadalquivir valley the bell beaker put an end to all previous cultures.

In /

In central Spain it developed into the group characterised by incised decoration. In the Carmona area at the same time, the maritime beaker appeared. The rock-cut tombs would also develop at this time. The maritime group occurs in various grave types and usually without any other cultural elements. The meseta type is consistently found with bowls, incrustation, incision, tanged daggers and earth graves. At the Tagus, Ebro and Guadalquivir river mouths the two types met and formed mixed groups and it was a product of these groups which spread to central Europe. According to him, the east European group have their best parallels in the beakers from the Catalayud, Somaen, and Zaragoza area, whereas the best parallels for the central German group are to be found in the Tagus area. The west European group is of course only related to the maritime type.

Sangmeister's view, that after arriving in Bohemia and Moravia the meseta beaker culture spread westwards until it came into contact with maritime beaker groups on the Rhine area, has already been mentioned (see p.310). He further believes that this westward movement continued both in a northerly and a southerly direction and gave rise to local groups such as the Veluwe beakers in Holland or the cord ornament beakers of Spain. He has called this east to west movement of the bell beaker the "Rückstrom" movement or horizon and has been able to identify the various features which appear in Rückstrom contexts. (The term "Rückstrom" is probably best translated by "reflux" in English.) The most important of these for a study of Spanish bell beakers are as follows (Sangmeister, forthcoming (b)) :- /

forthcoming (b)) :-

1. Maritime beakers decorated with cord impressions.
2. The small bracer with two and less often with four perforations.
3. Bone rings, sometimes decorated by ring and dot ornament.
4. Ring and dot ornament.
5. Bone button with v-perforations.
6. Button-handled pots.
7. Long narrow tanged dagger.
8. Rivetted daggers with a small projection on the heel.
9. Awl with central thickening.
10. S. Pedro de Estoril dagger type.

The significance for the Peninsula of each of these types will be discussed later (see p.324). At present it is sufficient to note that in south Germany these features can be dated to the Reinecke A 1 phase.

The evidence for the Spanish beaker culture must now be considered with especial reference to the views quoted above. It is proposed to consider the material under the following headings - Origin, Other relationships, Reflux movement, Anthropology, and Chronology.

b. Origin of beaker culture

The possibility that the beaker culture originated in central Europe rather than Spain is frequently mentioned. The evidence for or against this hypothesis is discussed below.

(1) Evidence from associated finds

Sangmeister was able to isolate several features typical of German /

German bell beakers, which he maintained were unknown in Germany before the advent of the bell beaker cultures. These are discussed below with especial reference to the possibility of a Spanish origin for these features.

1. The use of horizontally arranged decoration was introduced to central Germany by the beaker pottery; in Spain it is known in impressed ware contexts and it was also noticed on the imported pottery at Vila Nova de S. Pedro.

2. Hyphenated ornament was unknown in central Europe before beaker times. In the Peninsula a rough hyphenated ornament is known from Vila Nova de S. Pedro (Pl.24) but it could also have originated in the cardial impressed wares.

3. Incrustation and colouring of the surface was noticed especially in the Zuheros impressed ware group, but incrustation may be known from Rössen contexts in Germany.

4. Simple bowls are common in the Peninsula and footed bowls are found, but are very rare, at Los Millares, La Zarcita and Vila Nova de S. Pedro. Maier points out that footed bowls are common in eastern and south-east Europe (see p.96).

5. Tanged daggers are first discovered in central Europe associated with beakers. There is no evidence for tanged daggers in Spain before beaker times either, though daggers which have been found at colonial sites (e.g. Los Millares and Vila Nova de S. Pedro) and attributed to the beaker phase, might be earlier. The distribution of tanged daggers (see map XIV) certainly shows a concentration of them in the Tagus area and south-eastern Spain. Tanged daggers are known in early bronze /

bronze age contexts in the east Mediterranean at Platanos in Crete (Zervos, 1956, Fig.192), Cyprus (Bonnet, 1926, Fig.160, 3), the Cyclades (Tsountas, 189, Fig.), Poliochni - Lesbos (Brea, 1959, Fig.8) and in Anatolia (Stronach, 1957, Fig.1 and 2).

6. Hollow-base arrowheads are common in south-east Spain during the L.M. I period and are very common in Portugal during the V.N.S.P. I period. In Cataluna and central Spain, two areas important for their possible contact with central Europe in beaker times, hollow-base arrowheads are very rare. Hollow-base arrowheads were also known in the Rössen culture of south Germany (Sangmeister, 1955, Fig. opp. p.34; Buttler, 1938, p.51 and Fig.17, No.20 and 26).

7. Crouched burial in earth graves which are orientated in north to south direction are associated with beakers in central Europe. Unfortunately in the Peninsula the evidence for dating the earth graves containing beakers is very unreliable. In pre-beaker times the main custom was collective burial in constructed graves. Only in the fosa graves of Cataluna and the silo graves of Campo Real was single crouched burial in a small pit known to have been practised. Of the fourteen earth graves in the Peninsula known to contain beakers, about 12% contained v-perforated buttons, and corded beakers were found in the earth graves at Filomena; these are both late or reflux features and they indicate a late date for the graves in which they were found. Non-beaker earth or cist graves often contain late features such as gold, long tanged daggers or halberds (see the chapter on the Argar culture), so there can be no doubt that earth graves are found in late beaker and early Argaric times; but it is not known /

known if they can be dated to the early beaker period. The three most important sites in this respect are Ciempozuelos, Samboal and Fuente Palmera. The beakers at all of these sites are carinated bowls with incised ornament and decorated bases. The beakers from Samboal and Ciempozuelos are further characterised by the presence of a decorative band on the inside of the rim, a feature which is found on late beakers in south-west Germany. Small tanged daggers were found at Ciempozuelos and Fuente Palmera.

The beaker find from Mejorado del Campo also contained a tanged dagger and a Palmela point, but details of the beaker and of the circumstances of the find are too inadequate for consideration here. The finds from the three graves mentioned above are very consistent and it is important to know if these elements may be regarded as early or late.

It was noticed that these cist graves contained beakers with decorated bases. The habit of decorating the bases of pots is, with the exception of a burnished pot at Mesas de Asta (Fig.3, 4), unknown in the Peninsula before beaker times; this custom is known on beakers from central Europe and in Sardinia (see p.323). In Sardinia pottery with this decoration was associated with v-perforated buttons and a meseta beaker with basal decoration was found with a v-perforated button in earth grave 2 at Sant Olaguer (Sabadell). In Toralla cave a basally decorated beaker bowl was found with a v-perforated button and a bone disc decorated by ring and dot ornament. Decoration inside the rim, as has been mentioned above, was common in the west European bell beaker group, which is closely connected with the Adlerberg /

Adlerberg culture. It is also present on a footed beaker bowl in Atalaya 6 (M.G., Pl.7, 2) and on the Samboal and Ciempozuelos beakers. The Ciempozuelos tanged dagger is very similar to tanged daggers in beaker contexts in central Europe. The dagger from Fuente Palmera has been the subject of a recent study by Sangmeister who believes that there is a good parallel for it in an early Remedello grave (Sangmeister, 1957, Fig.1, cf. Acanfora, 1956, Fig.9).

Reference has already been made to the tanged dagger and Palmela point from Mejorado del Campo. Palmela points are frequently found in cist graves associated with tanged daggers and gold which can be dated to early Argaric times (e.g. Montilla, Cordoba and S. Bento de Balugaes, Minho).

Thus the evidence for the date of earth graves is confusing. Some, such as Filomena, obviously belong to the "reflux" horizon, but in central and south-west Spain, there is evidence to suggest either a late or an early date though probably the evidence for a late date is the stronger. If, on the other hand, the graves can be proved early it would be of great importance because they contain features which are found in the central European beakers (tanged daggers, incrustation, etc.).

Single crouched burial in earth graves was known in the Rössen culture but they were not orientated north-south as the typical beaker graves in central Europe are. There is no evidence regarding the orientation of the Spanish earth graves. At Ciempozuelos no fixed system of orientation was observed (Facundo Riana, et al. 1894). A burial, apparently associated with a decorated slate plaque, in Cueva de /

de la Mora, Jabugo (Huelva, see p.211), was orientated north to south. In the corbelled graves, dolmens, etc., the usual orientation of the passage was north-west to south-east.

No definite conclusions can be drawn from the analysis of the above material but the evidence is probably more in favour of a Spanish origin than of a central European one.

(2) Further evidence.

1. There is no good prototype for the beaker shape in central Europe. A possible prototype for beaker ware in Iberia will be suggested below.

2. Spanish beakers are characterised by rounded bases. In central Europe most beakers have flat bases. The possibility of a rounded base becoming a flat base is greater than the possibility of a flat base becoming a rounded base. Reflux beakers from Solanells and Aigues Vives, Corderroure, do in fact have flat bases (Castillo, 1928, Pl.LXXVI).

3. The tremendous beaker concentration in the Tagus area seems to be too high to be accounted for by immigration from central Europe.

4. There is direct evidence that V.N.S.P. I was destroyed by the beaker folk; it seems unlikely that they could have come all the way from central Europe in such numbers as to be able to attack and destroy a strongly fortified position such as Vila Nova de S. Pedro and probably also S. Mamede and Praganca (see p.209).

Objects known to arrive with the Reflux movement do not appear in such profusion.

5. There was an active beaker metal industry in the Peninsula and probably /

probably principally in the Tagus area (see maps XIV and XV) which again is surprisingly active if it is regarded only as the result of central European immigrants, and it also produces metal types which cannot be paralleled in central Europe (e.g. Palmela points).

Thus the evidence available at present suggests that beakers originated in Spain rather than in central Europe.

(3) Positive evidence for the origin of the beaker in Spain.

Both Castillo and Sangmeister suggest that the meseta beaker originates in the impressed ware cultures of the interior. The survey of impressed ware sites in the Peninsula revealed, however, that there is very little evidence for neolithic cultures in the interior of the Peninsula. The earliest penetration seems to have been by the fosa grave culture from Cataluna or by the colonists from the Tagus area during the V.N.S.P. I period. Castillo and Sangmeister further suggest that the lower Guadalquivir valley was important for the development of the beaker; but the distribution maps show the importance of the Tagus area in beaker times. In looking for the area where beakers are most likely to have developed, one must look for an area where the following features are known in pre-beaker contexts: all the typical beaker shapes; colouring and burnishing of pottery; pottery with thin walls and well-fired; horizontally arranged decoration; incrustation; metallurgy; and hollow-base arrowheads. The mention of metallurgy immediately restricts the possible area to the regions around the colonies. The use of hollow-base arrowheads again suggests the Tagus area where most of the other qualifications are also met in the imported pottery at /

at Vila Nova de S. Pedro. The form of this pottery is cylindrical with slightly concave sides and a lightly rounded base (do Paco, 1958, Fig.5-7). If these features are slightly exaggerated it is possible to obtain a good maritime beaker form. Bowls are also known from the imported pottery. This pottery is much finer and better fired than the contemporary indigenous pottery of the caves, dolmens, etc. The surface is usually red in colour and highly burnished. The decoration is often arranged horizontally and consists of a few parallel grooves or of horizontal herring-bone pattern. (In the very earliest pottery the herring-bone was probably placed vertically but later examples show a loosening of the design and horizontally placed herring-bone.) In the imported pottery bowls the decoration tends to be restricted to a zone below the rim - a feature prevalent in beaker bowls. Another important fact regarding this pottery is that it is known that many attempts were made to copy it and imitation imported ware has been found at several sites, including Palmela, Carenque, etc. (see p.187). The Serra das Mutelas corbelled grave, with the exception of three Palmela points, contained no late features; the maritime beaker found there is decorated by bands consisting of three horizontally grooved or incised lines (Castillo, 1928, Pl.LIIII, 8) and this may be a development from the type of imported pottery represented by do Paco in Fig.5b of 1958. The maritime beaker, however, seemed to have preferred the horizontal pattern which it soon adapted to produce the true maritime beaker type. The hyphenated ornament may well come from cardial groups still surviving in the area but dotted ornament /

ornament was already known in Vila Nova de S. Pedro (Pl.24).

Incrustation is not known at Vila Nova de S. Pedro nor can the origin of the carinated beaker be explained in this way. The carinated beaker, which is frequently incrustated, may have developed in the south-west where it is also very common, perhaps as a result of some as yet unrecognised influence from Mesas de Asta or Acebuchal. Shouldered bowls were known from Mesas de Asta, and one vessel actually had an omphalos base. Incrustation is also known in this region in the Zuheros pottery. If the carinated beaker did originate in this area it may have taken over the custom of silo grave burial which was practised at Campo Real (at Carmona?).

The maritime beaker and the beaker bowl could be regarded as having originated in the Tagus area; it may be possible to consider them as a product of the indigenous group which was noted during the V.N.S.P. I phase. The close contact this group had with Vila Nova de S. Pedro would enable it to learn the art of good potting and the basic secrets of metallurgy from the colonists. The presence of beaker ware in the different grave types would also be explicable because the indigenous inhabitants had also used them, though the architecture was no doubt inspired by the colonists. The beaker folk seem to have shed their indigenous cultural assemblage of trapezes, leaf-shaped arrowheads, etc. in favour of the colonial types. The picture may in fact be more complicated and the beaker culture may be a result of mixture between the colonists and the indigenous people after colonial contact with the east Mediterranean had been broken.

Thus /

Thus the carinated beaker may have originated in the south-west of Andalucia as Castillo and Sangmeister originally suggested.

The position with regard to a possible African origin for bell beakers may be roughly summarised as follows. There are undoubtedly examples of bell beakers in north Africa, for example at Gar Cahal, Caf Taht el Gar (Tarradel, 1955, and 1957-58), Dar es Sultan (Ruhlmann, 1951, and Castillo, 1953) and Mugaret el Aliya (Ruhlmann, 1944), but they occur without their typical associated finds. The excavators of Gar Cahal were quite satisfied that the beaker in that cave had been imported from Spain, and a similar case can be made for the other beaker pottery found in north Africa. Forde-Johnston in a recent survey of the neolithic cultures of north Africa came independently to similar conclusions (1959, p.101). It must be added too that the north African neolithic cultures did not make pottery of a high enough quality for bell beaker ware.

c. Other beaker relationships

Here there are considered other relationships not included under Origin or Reflux.

The maritime beaker type is found widely spread in west Europe, north Africa, Sicily, north Italy, south France, Brittany and the length of the Rhine. The most likely people to be able to undertake such voyages would be the colonists.

Omphalos bases and basal decoration are customs which are difficult to trace owing to the fact that an omphalos or decorated base is unnecessary when pottery vessels have flat bases. Most of the central European beakers have flat bases. Decorated bases are, however /

however, known in the Danube (Castillo, 1928, Pl.CXXXII, No.2 and 4) and in Saxo-Thuringia at Sandersdorf (Castillo, 1928, Pl.CLXXI) and an omphalos base may occur at Zalkovice (Castillo, 1928, Pl.CLXL, 2). Omphalos and decorated bases are known at S. Bartolomeo in Sardinia (op. cit. Pl.CXVIII). Footed bowls connect that site with Anghelu Ruju (op. cit. Pl.CXIII) where v-perforated buttons are found and with the Bohemian beaker group (Castillo, 1928, Pl.CXXXVIII and CLVII). Decorated bases are known on the Cycladic frying pans (Zervos, 1957).

Simple bowls and bowls with decorated rims seem to be more common in the Bohemian group than in the other central European groups (Castillo, 1928, Pl.CXXXII, 1; CXXXIX, 1; CLVII, 2,9,10; CLIX, 2; CLX, 3; CLXII, 18).

The central German Metope pattern which Sangmeister thought might be related to the Tagus area and central Spain, probably has better parallels in the decorative motifs used on the Almisaraque long bones (cf. Castillo, 1928, Pl.CLXX, CLXXII, CLXXVI and Leisner, 1943, Pl.93).

Palmela points do not seem to be associated with beakers outside the Peninsula. In the Peninsula the evidence for dating them is mainly late. They are found with long tanged daggers or gold objects at sites such as Vilavella, Alcala 4, Aldeia Vieja de Tormes, Montilla, Sao Bento de Balugaes and Cabeceiras Basto. They must be later than the movement of beakers from the Peninsula to central Europe, otherwise one would expect to find them there. Their concentration in the west of the Peninsula makes it probable that they are /

are a product of the Tagus metallurgical industry. Palmela points may have been inspired by some east Mediterranean prototype. They are known, for example, from the early bronze age level at Tarsus (Goldman, 1956).

These brief notes indicate the widespread distribution and contacts of the beaker culture.

d. The beaker reflux movement (or horizon)

On page 312 Sangmeister's theory of the 'reflux' was mentioned. It is now necessary to consider the evidence in more detail and particularly the evidence relating to the Peninsula. The numbers below correspond to the numbers used on page for listing the reflux elements according to Sangmeister's views.

1. Maritime beakers decorated with cord impressions have been fully dealt with by Castillo (1956). Their distribution is mainly in north-east Spain (see map XI). They are known from the south of France and appear in A 2 levels at Baldeg. They are also known in the Adlerberg culture.
2. Bracers. Sangmeister (forthcoming) shows that in central Europe two bracer types are known - the short broad type with four perforations, which has an essentially central and north-western distribution and a longer and narrow type usually with two perforations which can be dated to A 1 in Germany (Ilvesheim and Nâhermemmingen), to Polado contexts in north Italy and late Pyrenean megalithic group in south France. It is a relatively common type in the Peninsula and has two main centres of distribution - south-east Spain and south Portugal. In south-east Spain it is found in Argaric contexts /

contexts which have, in Ch.4, been pointed out, and in south Portugal it appears together with v-perforated buttons at Palmela, S. Pedro de Estoril, Casa da Mora and Olelas.

3. Bone rings are not found in the Peninsula but a bone disc decorated by ring and dot ornament is known from Toralla cave. Bone rings sometimes decorated by ring and dot ornament are known from Adlerberg, Singen, Straubing and Gemeinlebarn.

4. The subject of v-perforated buttons has been discussed recently by Guyan, Arnal and Hajek (1949, 1954 and 1957). Hajek publishes a useful distribution map (Hajek, 1957, Fig.26). In central Europe the buttons are usually disc-shaped or conical with slightly rounded tops. They are frequently made of horn. Hajek believes that v-perforated buttons are to be dated to the early bronze age (i.e. Reinecke A 1, Straubing/Adlerberg). Conical buttons are found scattered along the east and west coasts of the Peninsula. Pyramidal or prismatic buttons are characteristic of sites in the south of France or the north-east of Spain. Tortuga or tortoise-shaped buttons are found commonly in Sardinia and around the Tagus mouth, but there are a few in south France and along the east coast of Spain. This suggests that there was direct contact between the Tagus area and Sardinia. The tanged copper dagger found at Anghele Ruju was made from Spanish copper (E01) and omphalos and decorated bases are also common to both areas.

5. Ring and dot ornament was noticed on bone rings in south Germany and also on a beaker (Castillo, 1928, Pl.CLXVI, 4). It was found in Cataluna on v-perforated buttons and a bone disc (Toralla cave) and at /

at El Argar on a bone spatula. It also appears at Anghelu Rujù (Sardinia) on a bone mount for a four-holed bracer, and in Polada (Italy) on bone rings. A bone comb found on Lipari is decorated with an incised pattern of rings and dots arranged in two zigzag tiers which Taylour compared with an ivory comb from the fourth shaft grave at Mycenae (Taylour, 1958, p.43-4, Pl.8, No.2). He quotes other examples of the use of this ornament from Mycenae (Schliemann, 1878, Fig.127, p.78) and from a middle Helladic grave at Eleusis (Mylonas, 1932, Fig.119 top of p.144), and Piggett adds that this is known from the Hittite levels at Alaca (Kosay, 1951, Pl.LXXXIII, Fig.1) and Beyce Sultan (late Hittite checkpiece). Brea in reporting the find of a bone object decorated with this motif from Poliochni in Lemnos pointed out that the motif seems to originate at the end of Troy I and has its greatest distribution in Troy III and survives into Troy IV and V and even into Troy VI (Brea, 1957, p.205-6, footnote 12 of bibliography). This motif is also incorporated in the elaborate meander patterns of bone tubes and check pieces from Hungarian sites such as Veterov (Hachmann, 1957, Pl.70). Piggett is of the view that this motif has two main periods of distribution - during Troy III and again in late Helladic times so that in both periods it is Mediterranean in origin. The origin of this motif in the Spanish sites is dubious. It may be considered a reflux element, or it may be regarded as relating to the Mediterranean source. In view of the fact that there is little if any Mediterranean influence to be seen in Spain at this time and that the main movement is north to south rather than east to west, it would /

would be a justifiable assumption to say that it came from central Europe. On the other hand, how it arrived in central Europe in the first place is not clear. If it came in from the east Mediterranean there are no indications of the route by which it travelled. It would be interesting to know how common it actually is in southern Germany at this time. There appear to be, for example, only two cases of its use in the Straubing cemeteries (Hundt, 195, Pl.11, Nos.35 and 42), though examples are known from other sites such as Munich (Landwurmstrasse or Munich Valleyplatz 3).

6. Button-handled pots begin in upper Italy in the Polada culture and spread, together with 'ad ascia' handles, towards Sardinia, south France, Cataluna and Portugal. In all these areas they appear early with the reflux horizon, but they survive until Urnfield times (Maluquer, 1942, p.171-188).

7. The long narrow tanged dagger is probably better known as the west European knife. It is known from Odoorn in Holland, Roundaway, Faversham, Mere and Winterslow in England and Luderov in Moravia. In Iberia it is known from Barro, Cabeza da Ministra, Sabina 32, Murcia, etc. (see map XIV).

8 and 9. Daggers with a small projection on the heel and awls with central thickening are discussed under the Argar culture.

10. Sangmeister believes that the tanged daggers from S. Pedro de Estoril are a reflux type, the nearest parallels are at S. Eugene in the south of France. Other tanged daggers in the Peninsula have a broad tang and long sloping shoulders and are not unlike one from Grotte du Castellet, southern France (Castillo, 1928, Pl.XCVII, 3).

These /

These are also probably linked with the reflux movement. In the Peninsula they are known from Colet de les Forques, Espunola; Puig Rodo, L'Estany; Rocafort, Valencia; Asilo de Bor, Valencia; Vilavela, Galicia; and there may be further examples from Miguel Ruiz sandpit (Madrid); Vila Nova de S. Pedro; Runa Peneda; and Cascais, Portugal. Their distribution is similar to that of cord decorated beakers.

Other features probably due to reflux movement may be mentioned.

Decoration by lozenges is noted at Aigues Vives, Solanells (both are maritime beakers with flat bases) and at Carvalhal (carinated beaker). In central Europe it is known at Stetten (Castillo, 1928, Pl.CXXXII, 1), Kralopy (op.cit. Pl.CXXXIV, 3), Strelice and Esseklee (op.cit. Pl.CLXIII, 1 and 2). It is also a familiar design at Anghelu Ruju (Castillo, 1928, Pl.CXIII, 2 and 4).

Beakers such as the ones from Cartanya (Castillo, 1928, Pl.LXX) are basically maritime in type because the decoration is horizontal and arranged in narrow bands, but the plain zone has been replaced by simple decoration. This is a typical feature of many central European beakers, e.g. Csepel Island, Rozdalovice, Rez, etc. (see Castillo, 1928, Pl.CXLII-CLXVIII). It is uncertain whether the Cartanya beaker should be regarded as a prototype for these or as a result of the reflux movement. It will be noticed that the simple incised zigzag of the Bohemian beakers is also found on the Cartanya specimen.

A small crescent-shaped pendant and a bone toggle with a side loop /

loop were found at Filomena, where cord ornamented beaker has also been found (Esteve Galvez, 1956, Fig.3 and 4). The toggle has been compared to two from the Yorkshire barrows of Driffild and Garton Slack (Esteve Galvez, 1956, p.551 and Piggott, 1958, p.228), and Piggott indicates further manifestations of the same idea from Scotland. Hajek believes that these toggles are related to the central European crescent-shaped pendants which are often referred to as model bows (Hajek, 1939-46, p.20) and in fact a probable example of one was also found at Filomena. Crescent-shaped objects are known from Beaker contexts in central Europe, Sardinia and south-central Italy. It seems likely that the arrival of both objects at Filomena is due to the reflux movement.

There is sufficient evidence to suggest that gold was first used by the beaker folk but whether this was a result of the reflux movement or if it was already known before the eastward spread of beakers is not an easy question to answer. Gold is also known from beaker contexts in central Europe.

This brief survey has been sufficient to show that the beaker culture in the Peninsula has undoubted connections with many diverse areas. A full appreciation of their significance is beyond the scope of this thesis but it seems to be obvious that the beaker culture originated in the Peninsula and went from there to central Europe where it reached Bohemia before beginning to spread westwards again. The reflux movement seems to have been complex and also reached Italy and Sardinia. The different distributions in the Peninsula of the different reflux elements, e.g. cord-decorated beaker and v-perforated buttons /

buttons, suggests that there may have been several reflux movements which reached different areas of the Peninsula. Most reflux movements must, however, have entered the Peninsula in the north-east because there is a marked concentration of reflux features there.

e. Physical anthropology

It is an oft repeated statement that bell beakers are the product of a beaker folk who are characteristically brachycephalic. This statement must be examined in the light of present evidence and the following questions answered:- Is the brachycephalic type something new or can it be related back to earlier prehistoric groups? If it is new, where did it come from? This last question is important because if the beaker originates in Spain, the racial type must also have come from there.

At the end of the neolithic in Europe there were various racial types (Mediterranean, Cromagnon, etc.). In each prehistoric group, however, one type would be dominant and the others present as traces. The Alpine or Tauridae racial types were scarcely represented.

The Tauridae race is typical of the Caucasus and one can distinguish two main types in this group. The Dinaric group which has been found from the Balkan peninsula to Bavaria and the Tyrol and the Armenian group which is typical of Asia Minor.

The Alpine race is discussed by Gerhart (Gerhart, 1953, p.108 and 112-6 and 249). He investigated all known beaker skeletal material, as a result of which he came to the conclusion that a new racial type makes its appearance in central Europe with the bell beaker. /

beaker. This was the Tauridae. He was able to show that this type predominated in most bell beaker groups. In a more recent survey of the material Dr. Gerhart (Gerhart, 1958) was able to show the following picture:

In the central German Beaker group the Tauridae predominate - especially in the males, but Alpine, Nordic, Mediterranean and Klötze also occur. He pointed out too that the Mediterranean types here were very pure and difficult to derive from the earlier Bandkeramik stock.

The six skulls from Neudorf, Frankfurt, show the predominance of the Tauridae in that region; also present was the "Planoccipitalen Steilkopf" and one Nordic type.

At Adlerberg, Tauridae, Alpine and Klötze and perhaps one Mediterranean type are found.

From Bohemia and Bavaria, where the skeletal material has rarely been published, two Alpine types, a young nordic woman, one coarse Klötz and a planoccipitalen Steilkopf are known.

The west German Group included Klötze and Mediterranean types.

Unfortunately for Spain there is no comparable study of all the available skeletal material; but it seems to be fairly clear that in Spain the typical neolithic races are of Mediterranean and the Cromagnon stock. The Alpine skulls from Ciempozuelos are well known and have often been used to show that the beaker folk did come from Spain. Fuste (1956) includes skulls from Alcazar del Rey (Cuenca), Tisuco (Segovia) and Eira Pedrinha (Portugal) in the category of Brachycephalic skulls. In the east of Spain, the skulls from Chiva, Monte /

Monte de Barsella and Cueva de la Pastora are reputed to be of the Dinaric-Armenoid type (Fuste, 1956, p.119) and probably the skull from Rocafort, found together with a tanged dagger, can be included in this group. Hoyo de los Santos (1947) also includes the skull from Cueva de la Mora, Jabugo, Huelva in this group as well as others from Alcolea de Cordoba and Penaflores, though the dating evidence for the last two sites is not given.

There is apparently marked brachycephalic evidence in the region of Solsona, associated apparently with megalithic sites which have been considered late. (They contain button-handled pots.) No brachycephalic types are known from caves in Lerida or from fosa graves.

In summarising the position, it is clear that a Dinaric element is distinguishable in the early bronze age population of Spain, and a few brachycephalic skulls are known in different areas, though to which specific racial type they belong is not stated. Unfortunately, there is no evidence to show that this racial element is an early feature in the Peninsula and therefore a possible prototype for the beaker folk. The only possible early skull is from a cave near Huelva, but even there there is evidence of two layers of occupation and no exact information regarding which level the skull was found in.

f. Chronology

The beaker culture has widespread connections with many different cultural groups so that it could be expected that its chronological position would present few problems. The situation is /

is made more complex, however, by the reflux movement and care must be exercised in order to ascertain whether or not a particular find belongs to the primary west to east spread or to the reflux movement.

1. Central Europe

It was obvious from the review of Sangmeister's theories (see p.310) that the bell beaker culture survives at least into the Reinecke A 1 period, that is, it is contemporary with the Straubing/Adlerberg cultures. This is illustrated by a grave from Safferstetten which contained a handled bell beaker and a rivetted dagger, an association which led Holste to believe that there must be a transitional stage between the bell beaker and the Straubing cultures (Holste, 1943, Trauritz-Hellweg, 1924). Another example is grave 3 at Straubing which contained a handled bell beaker, a wrist guard, and a rivetted dagger (Hundt, 1958, Pl.1, No.10-12). The reflux movement seems to have taken place during the Reinecke A 1 phase, as is clearly shown by the appearance of typical A 1 features, often in association with beakers, in other areas. For example, the grave at Odoorn in Holland contained a cord decorated beaker and an awl with central thickening which is typical of Reinecke A 1 sites in south Germany. This awl type is also found in the south of France and Spain (see p.449). Ring and dot ornament found in Straubing also occurs in Sardinia and Cataluna.

The date for the arrival of beakers in central Europe is less clear. An examination of the evidence available in central Europe led Milojevic to equate the beaker culture with the later phases of Vucedol (Milojevic, 1949, p.89), with the end of the "Trichterbecher-kultur" /

kultur" in Moravia (Milojcic, 1949, p.90), and with the late Baden culture (Milojcic, 1949, p.96). In terms of the absolute chronology he would date the arrival of the bell beaker to about 2000 B.C. Hajek (1956, p.64-65) reaffirms the contemporaneity with Laibach. He also notes contacts with the Rivnac culture. (This is contemporary with early Schnurkeramic which in turn is contemporary with Jevisovice B. The latter is earlier than Trichterbecherkultur at that site.) In the main, Hajek places beakers parallel with the proto Aujetitz (or Marschwitz) culture. There is no evidence to overlap with true Aujetitz.

In north-west Germany the bell beaker appears at the transition from mid to late Passage grave times (Milojcic, 1949, p.102).

2. Bell beaker chronology in the Mediterranean region

The excavations by Tarradel in Spanish Morocco have yielded important results for a consideration of beaker chronology. At Gar Cahal cave Tarradel found bell beaker sherds stratified above a level containing sherds of painted pottery which have been likened to the painted ware of the Serraferlicchio culture in Sicily. In the same level were two or three sherds of cardial ware. The flint industry was poor in quality throughout the cave and the author suggests that it belonged to the local tradition; the associated pottery was undecorated and uninteresting. The excavators were satisfied that the bell beaker was imported because it appeared without its usual cultural objects - arrowheads, etc. - and in a foreign environment (Tarradel, 1955, p.13-23).

Brea dates the Serraferlicchio culture in Sicily to between
2350 /

2350-2100 B.C. (Brea, 1956, table opp. p.98). Thus if the sherds from Gar Cahal are Serraferlicchio painted ware they could have arrived in the cave any time between about 2300 and 2100 B.C. The maritime beaker arrived sometime after this and it is quite conceivable that it arrived before 2000 B.C., which is the approximate date for its arrival in central Europe.

In Sicily itself, maritime beaker sherds were found in a cave at Villafrati associated with Moarda pottery (Castillo, 1928, p.126) which Brea appears to date from 2100-1450 B.C. (Brea, 1956, table opp. p.98). Recent finds from Grotta Palumbara near Syracuse show beaker sherds associated with pottery of the Malpasso style (Unpublished information kindly supplied by Prof. Piggott, who saw the material in Syracuse Museum). The Malpasso pottery style is contemporary with the Piano Quartara period in Lipari which shows early Helladic influence and is dated by Brea to between 2100 and 1850 B.C. (op. cit. table opp. p.98).

The dates obtained from all this evidence would permit the arrival of bell beaker in north Africa and Sicily before 2000 B.C.

Brea (1957, p.90) also refers to the find of a v-perforated button at Grotta Chiusilla at Isnello in Sicily which suggests that the reflux movement may also have reached Sicily though there is no other evidence for it.

The three bell beaker graves from north Italy are frequently assigned to the Remedello culture (Acanfora, 1956) though in fact no features typical of Remedello are present in the graves. The beakers are of the maritime type but (with the exception of one from Santa /

Santa Cristina) do not have typical maritime decorative motifs. The beaker from Santa Cristina is decorated by zigzag ornament, an unusual feature in maritime beakers. A flat axe found at Santa Cristina resembles the Altheim type and a handled cup from Ca' di Marco resembles the Straubing or Laibach Moor cups rather than the Polade cups (Castillo, 1928, Pl.CXXII-CXXIII). It is possible that the north Italian beakers are due to an early reflux movement from Germany rather than to movements arriving from the Iberian Peninsula.

In Sardinia the beaker appear to be in reflux contexts but there is no reliable internal dating evidence.

In Spain and Portugal the Leisners came to the conclusion that beaker pottery appeared at the end of L.M. I and continued into the L.M. II period. At Vila Nova de S. Pedro there was similar evidence for the appearance of beaker ware at the end of V.N.S.P. I and of its continuation into the V.N.S.P. II period. These colonies were considered to have been founded by 2400 B.C. Between this date and the beginning of the Argar culture about 1700-1600 B.C. there is no internal dating evidence in the Peninsula. A consistent date of c. 2000 is obtained for the arrival of beaker ware in other areas of the Mediterranean and central Europe. Thus if the beaker culture originates in the Peninsula it must have arisen before 2000 B.C. A tentative date of ± 2100 B.C. is suggested. The reflux movement must have entered Spain about 1700 at a period when the Straubing-Adlerberg-Singen cultures were flourishing in south Germany.

E. CONCLUSIONS /

E. CONCLUSIONS

It was considered that the evidence available favoured an Iberian rather than a central European origin for the beaker culture. The possibility of a north African origin was briefly discussed, but the evidence suggests that beakers are imported into north Africa from Iberia and cannot be regarded as originating there.

Beakers were thought to have arisen as a result of an attempt by indigenous populations to imitate the imported pottery belonging to the colonists. This may have taken place in the Tagus area and resulted in the maritime beaker and the beaker bowl. The carinated beaker on the other hand may have originated in south-west Spain. The study of the spread of the beakers in the Peninsula and to the rest of Europe can no more be done on a local basis but requires a careful examination and comparison of all known beaker finds in all areas. For this reason it was considered beyond the scope of this thesis, but it is suggested as an important item for research. There seems to be no doubt that beakers spread as far east as Bohemia and Moravia and then began to return westwards again. This movement, which can be dated to Reinecke A 1 times, was responsible for beaker or early bronze age groups in Holland, south France, Spain, Brittany and north Italy.

There seems to be fact behind the supposition that the beaker folk belonged to a different racial group. Gerhart classifies them as mainly Dinaric-Armenoide and Alpine types. Thus the spread of beakers must be attributed to movements of people and is not due to a change in pottery fashions.

CHAPTER FOUR. THE ARGARIC BRONZE AGE

A. INTRODUCTION

The best known bronze age culture in the Peninsula, after beaker times, is the Argar culture. El Argar itself is a rich settlement site in south-east Spain, which was excavated by Siret. The term Argaric has, however, frequently been applied to any bronze age culture with similar metal or pottery types in other parts of the Peninsula. It is necessary, first, to consider the finds from the site of El Argar and related sites in south-east Spain, and then to consider the finds from other regions in order to see how far, if at all, they could be said to have been influenced by the Argar culture.

B. THE CULTURE OF EL ARGAR

a. Summary of views held

Siret believed that this culture was a result of Celtic invasions from the north (Siret, 1913, vol. I).

Tarradel considers that the importance of the Argar culture lies in the possession of metal and the resulting industry and that, although not the only culture of the period, it was nevertheless the most important and dominating one. This would explain the finds of Argaric pottery and metal types outside the area of El Argar. In his note (Tarradel, 1950, p.72-84), he divided the sites of Argaric culture into three groups :-

1. The area of pure Argaric culture: south-east Spain.
2. /

2. The areas of strong Argaric influence: several regions, each of which shows individual characteristics - Andalucia, south-east Meseta, Valencia, etc.
3. The areas showing Argaric influences: the Meseta, Cataluna, and Cantabrian regions, where there is survival of Bronze I cultures.

Tarradel would consider the following as characteristic of group 1 :-

- a. Developed life in villages situated in easily defended places and near good agricultural ground.
- b. Houses built of stone and usually following some regular plan.
- c. The use of bronze for tools and weapons almost to the exclusion of stone and bone.
- d. The typical Argaric carinated bowl and the Argaric chalice.
- e. Burial by one of three methods - pithos, earth grave, or small cist.

He would limit the area of this group to south-east Spain, extending in the north to San Antonio de Orihuela and Callosa de Segura, and in the west to Pueblo de Don Fadrique, where the area is closed off by the Sagro Massif, the Segura Sierras, and the Cazorla Sierras.

The characteristics of group 2 are more difficult to isolate, as each region shows special characteristics. Tarradel would, however, stress the continuation of the Argaric semi-urban life, although villages may be smaller and simpler than in the pure Argar area; pottery and metal types are important for distinguishing this group too. While the northern limits can be given as somewhere in the /

the region of Castellon de la Plana, the western limits are not so easy to fix.

Tarradel's third groups, the areas showing survival of Bronze I cultures, must be considered in the respective regions.

Professor Evans, while recognising (as the previous writer had done) the importance of East Mediterranean features in the El Argar area, emphasised the northern relationships of Argaric culture and suggested that in fact the Argaric group should be considered as an end product of the spread of the Polada culture into Spain via Cataluna and Valencia rather than as the centre for development and distribution of the bronze age in the Peninsula. This theory must be very carefully considered in a discussion of the foreign influence in the Argar culture.

b. The site and its finds

El Argar is situated near the village of Antas, which lies in the north-east corner of the province of Almeria. The prehistoric settlement occupies a small, steep-sided plateau overlooking the River Antas, which enters the Mediterranean near Mojacar.

Siret excavated the site towards the end of the last century and found remains of houses which had a rectangular ground plan. Among the houses, or just outside the settlement, he found over 1,000 graves, of which less than a quarter have been published (Siret, 1887).

There were three types of graves present, pithoi, cists, and earth graves. A pithos is a large pot or jar and at El Argar it was usually ovoid in shape with an everted rim. The dead body was placed inside the pot which was then disposed of in, or near, the houses.

Cists /

Cists consisted of small enclosures formed by stone slabs, while an earth grave was a simple grave or pit dug in the soft marl subsoil.

There were 366 graves published in 1887, of which 294 were pithos graves and seventy-two were cist or earth graves. This indicates that 80.3% of the burials were in pithoi and only 19.7% in cist or earth graves. Cist and earth graves have been considered together because they are basically the same idea and an examination of the grave goods shows no significant difference between them. They will both be referred to as cist graves throughout this study.

There is little information regarding the finds within the houses and the analysis below is based on the finds from about 350 graves.

A brief survey of all the finds shows certain objects already familiar from a study of the beaker reflux movement. These are :

1. V-perforated buttons which are found in two cist graves at El Argar.
2. Ring and dot ornament was noticed on a long bone object (Siret, 1887, Pl.26).
3. Bracers occurred mainly as stray finds but two were found in pithoi and one in a cist grave.
4. Awls with central thickening have already been mentioned in connection with the reflux movement in north-west Europe (e.g. Odoorn). There are stray finds of awls of this type at El Argar.
5. Riveted daggers, with small projections on the heel, were included by Sangmeister in the reflux horizon. A dagger of this type was found in a cist grave at El Argar.

It seems probable then that these objects arrived at El Argar as a result of the beaker reflux movement.

It is of interest to consider whether these features show any tendency to be associated with one or other of the Argaric grave types or with particular objects. An analysis of the grave goods from El Argar and also from other Argaric sites has therefore been made and this will now be described.

1. The graves

The following analysis refers to the 366 graves at El Argar which were published by Siret in 1887. It has not been possible to include here finds from later excavations which are now in the museums at Barcelona and Madrid, as there is insufficient information regarding the grave types from which the different finds came.

The El Argar graves have been considered in two groups:

pithos graves	294 (80.3%)
cist and earth graves	<u>72</u> (19.7%)
Total	366

A table was made to show the percentage of each object encountered in the two types of grave (Table I). This was calculated from the number of graves with the object in one group and the total number of graves from both groups with the object. From the results of this table, it is readily seen that halberds and v-perforated buttons are found only in cists, and that dagger types I and II, axe type III, silver diadems, fish vertebrae and segmented beads are found exclusively in pithos graves. Of the remaining objects, most show a tendency to be found in pithos burials but this is /

TABLE I

OBJECT	CIST	Total 72	PITHOS	Total 294
Halberd	100%	5	-	-
V-perforated button	100%	2	-	-
Gold	66 $\frac{2}{3}$ %			1
Pot 6		1	50%	1
Dagger II		19	52%	21
Dagger V		7	53.5%	8
Pot 1		7	63.3%	39
Dagger VI		4	63.7%	7
Pot 5		39	64.5%	71
Bracer		2	66.3%	1
Awl		35	68%	76
Pot 7		3	70%	7
Dagger III		18	71.5%	66
Pot 3		6	84.6%	33
Silver rings and bracelets		15	85.7%	83
Pot 4		8	87.6%	57
Pot 8		7	89.6%	61
Spiral copper bead		11	90.9%	10
Axe III		11	91.6%	11
Pot 2		3	92.5%	37
Bronze rings and bracelets		15	92.6%	190
Axe I		1	95%	20
Dagger I		-	100%	9
Dagger IV		-	100%	2
Silver diadem		-	100%	4
Axe II		-	100%	11
Segmented beads		-	100%	19
Fish vertebrae		-	100%	12

is due to the fact that there are a greater number of pithos graves, a fact which could not be taken into account when calculating the percentages of this table.

Table II shows the percentage of graves in each group which contain the objects. This was calculated from the total number of graves in each group containing a given object and the total number of graves in that group. Thus thirty-nine out of seventy-two cist graves contain pots of type 5 = 54%. This table indicates that the objects which are commoner in the cists than in the pithoi are, pots of types 5, 6 and 7, daggers of types II, III, V and VI, halberds, gold, bracers and v-perforated buttons.

From both tables it can be seen that objects typical of the reflux horizon appear more commonly in cist graves than they do in pithoi. It can thus be suggested that there is a chronological difference between the two types of graves and, as the cist graves appear to be connected with the reflux movement, they are probably the earlier.

The finds from the graves will be discussed below in the following order: copper or bronze metal objects, silver objects, gold, pottery and stone or bone objects. Tables III and IV show the total number of objects in each grave group and indicate the reference letter used for each object in Tables V and VI, which show the associations of each object.

Bronze: The term daggers is also used here to include knives.

An examination of the daggers at El Argar shows that there are two main types: those which are roughly triangular in shape with a broad /

TABLE II

	<u>CISTS</u>		<u>PITHOS</u>
Pot 5	54%	Bronze rings & bracelets	64%
Awl	48%	Silver rings & bracelets	28%
Dagger II	25%	Awl	25%
Dagger III	25%	Pot 5	24%
Bronze rings & bracelets	20%	Dagger III	22.6%
Silver rings & bracelets	20%	Pot 8	20%
Pot 4	11%	Pot 4	19%
Pot 8	9%	Pot 1	13%
Pot 1	9%	Pot 2	12%
Dagger V	9%	Pot 3	11%
Pot 3	8%	Dagger II	7%
Halberd	7%	Segmented beads	6%
Dagger VI	5%	Axe I	6%
Pot 7	4%	Fish vertebrae	4%
Pot 2	4%	Axe II	3.7%
V-perforated button	3%	Axe III	3.7%
Gold	2%	Spiral copper bead	3.3%
Axe I	1%	Dagger I	3%
Axe III	1%	Dagger V	2.7%
Spiral copper bead	1%	Dagger VI	2%
Bracer	1%	Pot 7	2%
Pot 6	1%	Silver diadem	1%
Dagger I	-	Pot 6	.3%
Dagger IV	-	Gold	.3%
Silver diadem	-	Bracer	.6%
Segmented beads	-	Dagger IV	.6%
Fish vertebrae	-	Halberd	-
		V-perforated button	-

TABLE IIIEL ARGAR CISTS

<u>Ref.</u>	<u>Object</u>	<u>Number of graves</u>
B	Dagger 2	19
C	Dagger 3	18
E	Dagger 5	7
F	Dagger 6	4
G	Halberd	5
H	Awl	35
I	V-perforated button	2
J	Bronze ring or bracelet	15
K	Silver ring or bracelet	15
M	Gold	2
N	Axe	2
O	Spiral copper bead	1
P	Bracer	1
Q	Pot 1	7
R	Pot 2	3
S	Pot 3	6
T	Pot 4	8
U	Pot 5	39
V	Pot 6	1
W	Pot 7	3
X	Pot 8	7

TABLE IVEL ARGAR PITHOI

<u>Ref.</u>	<u>Object</u>	<u>Number of graves</u>
A	Dagger 1	9
B	Dagger 2	21
C	Dagger 3	66
D	Dagger 4	2
E	Dagger 5	8
F	Dagger 6	7
H	Awl	76
J	Bronze ring or bracelet	190
K	Silver ring or bracelet	83
L	Silver diadem	4
N	Axe	42
O	Spiral copper bead	10
P	Bracer	2
Q	Pot 1	39
R	Pot 2	37
S	Pot 3	33
T	Pot 4	57
U	Pot 5	71
V	Pot 6	1
W	Pot 7	7
X	Pot 8	61
Y	Segmented bone bead	19
Z	Fish vertebra	12

TABLE V Association of finds in the seventy-two cists at El Argar.

broad heel and those that are long and more or less parallel-sided with a narrow heel. A brief survey was sufficient to show that the former were more common in the cist graves and the latter, although appearing in both groups, were more typical of the pithos graves.

A more detailed examination suggests that the daggers may be classified into the following six groups (Fig.12) :-

- I - daggers with four rivets set in a square formation;
- II - small daggers with two or three rivets;
- III - long daggers with two or three rivets;
- IV - swords;
- V - daggers with more than three rivets;
- VI - daggers with three rivets arranged in triangular formation.

Of the 175 daggers found by Siret, fourteen are unclassifiable into these six groups. The occurrences of the different types in the two kinds of grave are as follows :-

Type of grave	No. of daggers of different types							unc.	Total
	I	II	III	IV	V	VI	Total		
Pithos	9	21	66	2	8	7	113 (70.2%)	11	124 (65.7%)
Cist & earth	0	19	18	0	7	4	48 (29.8%)	3	51 (34.3%)
Totals	9	40	84	2	15	11	161	14	175

Sometimes more than one dagger is found in a grave and the following figures must therefore also be noted :-

Number of pithos graves with daggers 111 (38% of pithoi).

Number of cist and earth graves with daggers 47 (66% of cists).

Points of interest in this table may be mentioned. Nearly half /

half of the group V daggers are found in cists, whereas none of the group I daggers is found in this type of grave. Assuming that pithos burials are successive to cist burials (as has been already suggested), a time sequence of dagger groups can be derived from the relative numbers found in the different grave types: V, II, VI, III, I, IV. (The fact that the largest daggers - type IV, the swords - come last in this sequence supports the order of cists first and pithoi later. It is unlikely that the short daggers would develop from the swords, but rather vice versa.) It is interesting to note that it is a dagger of group V, the earliest in this sequence, which has the small projection on the heel. This type was included by Sangmeister in his reflux horizon and it has good parallels in south Germany. It is interesting that daggers of groups I and IV were found only in pithoi at El Argar.

Halberds are represented by only six examples in Siret's Album. This is unfortunate, because the halberd is one of the most interesting types of implement found at El Argar. The other four or five given in the lists (see p.516), are to be found on display in the Museums of Madrid or Barcelona, without any information regarding their associated finds or grave type provided. A study of the six halberds illustrated by Siret shows that five were found in cists and one in a pithos burial (gr. 575). This last one is not a typical halberd and it is best considered on its own. The other five are fairly straightforward halberd types with midrib or thickening down the centre of the blade. Three or four rivets and remains of wooden hafts are still noticeable on all the examples. Only one shows a tendency /

tendency towards a broad splayed butt - that from grave 534 (cf. Fig.13, 2).

The chief associations with halberds is shown in table V.

It would appear that daggers commonly occur together with halberds. It will be noted that there are four instances of associations with daggers of the early groups, V and II, and one association with a dagger of the later group, III.

The halberd from grave 449 is perhaps the most interesting because it is associated with the group V reflux dagger type. The halberd itself is one of the finest ones illustrated by Siret, with a fine midrib, a regular blade, splaying out gently towards the butt end, which is curved. Remains of the wooden haft are still visible. The haft was held firmly in position by four regularly spaced rivets. Other finds from this grave include a bronze bracelet, a silver ring and a pot of Siret type 4.

The only find associated with the halberd from grave 533 is an unclassifiable dagger fragment, which may be a reflux type.

Brief mention must be made here of the halberd from grave 575, because at first glance it may seem more like a dagger. That it is in fact a halberd is shown by the midrib - a feature unknown in Argaric daggers but typical of the halberds and hence indicating a difference in the technique used in producing these weapons (i.e. casting in a closed mould as opposed to casting in an open mould.) The mark of the haft at right angles to the blade was clearly visible to Siret, and O'Riordain confirmed this statement (private conversation in 1956). A similar weapon from Ecija, now in the Ashmolean /

Ashmolean Museum, shows distinct signs of having been hafted at right angles to the blade. As further proof that it is indeed a halberd, one might add that if it were a "dagger", the "tang" would be rather too wide and flat for a comfortable grasp. This halberd differs completely from the usual halberd types and it will be discussed later. It has been called the Ecijar halberd.

Of the 111 awls found in graves at Argar, thirty-five (32%) come from cists and earth graves and seventy-six (68%) from pithos burials. Their most important associations can be seen in tables V and VI.

In the cist graves, daggers and pots of type 5 usually accompany awls. In the pithos graves, bronze and silver rings and bracelets, and pots of types 4 and 8 are the more usually associated finds.

Siret considered that awls accompanied female burials. There is little evidence here that this is so, though certainly the graves containing ornaments such as rings and bracelets may well be female. They represent just over 50% of the graves of the pithos type, but a much smaller fraction of the cist group (about 10%). Owing to the fact that the awls themselves cannot be classified into types, it would be unrewarding to push the study further. It only remains to add that awls are common in cist graves, but they are not so common in pithos burials.

Awls with central thickening are numbered among the stray finds.

Eleven cist graves contain bronze rings and six contain bronze bracelets (of which none come from earth graves); altogether fifteen (20%) cist graves contain bronze rings or bracelets. There are, however, 177 pithos burials accompanied by bronze rings and fifty-nine by /

by bronze bracelets, giving a total of about 190 graves which have either bronze rings or bracelets or both; this figure represents 64% of the pithos graves.

In both cist and pithos graves, dagger type III is the commonest dagger type associated with bronze rings and bracelets. In pithos burials, bronze rings and bracelets are also associated with daggers of types I and IV, which are never found in cists. The bronze rings and bracelets are more commonly associated with silver in the pithos burials than in the cist graves. The common association of axes with bronze rings and bracelets is interesting.

There are forty-four axes from graves at Argar, of which only two were found in cists. They can be classified into three types.

The first type is very distinctive because the ends of the splayed cutting edge are recurved and must have been for decoration (Fig.14, 3). This is the commonest type at Argar: twenty examples are known from pithos graves and one from a cist (No.387).

The second type has an extraordinarily narrow butt in relation to the cutting edge. A fine example is that from grave 278 at El Oficio (Fig.14, 5), where the butt measures half an inch and the cutting edge about two and a half inches. Another fine specimen, also from El Oficio, on display in the Archaeological Museum in Madrid, has a cutting edge about three inches wide which tapers to a point at the butt. This type is represented by eleven examples from pithos burials.

The third type is similar to type II, with the difference that the butt end is not so excessively narrow (Fig.14, 4). There are eleven /

eleven examples of this type from pithos burials at Argar and one from a cist grave.

The association of axe and dagger types is shown in the following table.

Daggers	Total	I	II	III	V	VI
Axe I	20	3	1	8	-	1
II	11	1	1	3	3	-
III	11	-	-	6	-	3

A consideration of these figures suggests that the axes of group II are the earliest, because they are most commonly associated with daggers of the early group V/II. This group would be closely followed by axes of group III which again show a fairly high proportion of axes related to early dagger groups. Group I is obviously the latest because there is, besides the relatively high proportion of axes associated with group I daggers, a high proportion of associations with the group III daggers, while the early groups V/VI/II are very poorly represented. This sequence deduced on the basis of comparison with the dagger groups is also valid typologically because group I, the group with the highly specialised cutting edge, must be a later development than groups II and III.

Axes are rarely associated with awls, there being only one case where a group III axe was found with an awl.

Bronze and silver rings and bracelets are commonly associated with axes (twenty and eleven graves respectively).

The most common pottery type found with axes is Siret type 4, which is found fifteen times, and type 5 which is found nine times.

Spiral /

Spiral copper wire beads are found in ten Argaric graves and a study of them is interesting. All the copper spiral beads found at Argar came, with one exception, from pithoi. In the one cist grave which contained a spiral copper wire bead, bronze and silver rings, gold and an awl were also found.

The most important associations in pithos burials are with bronze and silver rings, bracelets, awls, daggers of types I and III, and pottery of Siret types 3 and 4. They are also associated once with a silver diadem and once with segmented beads. It is clear from the above associations that spiral beads are associated with objects typical of the pithos burial at Argar.

The following is a list of the graves containing copper spiral beads: Grave 338, 476, 453, 578, 738, 2, 62, 704, 636, 299.

Siret refers to copper beads, but an examination of the objects which Siret calls beads shows that they are in fact little more than tiny fragments of copper wire bent to form a rough circle.

Silver is not infrequent in the graves at Argar and is usually in the form of rings or bracelets. There are also a few diadems and even some daggers with silver rivets. Fifteen different graves in the cist group contain silver. This figure represents fourteen graves containing silver rings and three containing silver bracelets. In the pithos groups, silver is found in eighty-three burials, of which seventy-seven contain rings and thirteen bracelets, four contain silver diadems and one contains a stepped silver ornament. About 20% of the cist graves contain silver and 28% of the pithos graves, but the total number of silver rings and bracelets found in pithoi /

pithoi is greater in proportion than the total number found in cists. The proportion of rings to bracelets in both grave groups is almost the same, but rings are very slightly commoner in pithos burials and bracelets in cist burials.

Silver is more commonly associated with daggers of the later groups III and IV, and with pottery of Siret types 1, 3 and 4.

The remaining silver objects from Argar can be dealt with briefly. The diadems, four in number, are found only in pithos graves. They consist of a fine band with a circular disc attached to it by means of a slender stem. The stepped silver mounting from grave 678 is quite unique in the Spanish bronze age.

Only three examples of gold objects^{were} found at Argar; two were found in cist graves (89 and 2) and one pithos (378).

The gold found in grave 2 was a large spiral ring, now somewhat bent. From grave 89 came a small gold ring. In grave 378, the gold was present in the form of a tiny stud or rivet about half an inch high which was cylindrical in shape but with a waisted effect, the base was wider than the top and seemed to be marked by tiny punched dots around the edge.

The gold objects from grave 89 and 378 have no associated finds and the ring from grave 2 is associated with bronze and silver rings, a bronze bracelet and a pot of type 2.

Pottery: No fresh study of the pottery types can be made owing to the fact that Siret did not publish drawings of the pots. Instead, the types of pots present in a grave were indicated by a number which corresponded to one of eight basic types which he had classified /

classified (Fig.16; see Siret 1887, Fig.XVIII). These types were briefly as follows (Fig.16) :-

1. Hemispherical bowl, whether deep or shallow.
2. Deep hemispherical bowl with inturned rim.
3. Smallish rather globular pot, with inturned rim, sometimes provided with a foot ring or lugs.
4. Large globular pot, with an everted rim.
5. Various forms of carinated pot.
6. A biconical vase type with small mouth.
7. The "Chalice".
8. A small pot with a narrow base, and sides splaying out gently to form a wide mouth.

The pottery is usually well burnished and undecorated. The colour varies between a deep red brown and black. The paste is usually good with fine grit often containing mica flakes.

The distribution of the different pottery types between the two grave groups is shown below :-

Pottery types:	1	2	3	4	5	6	7	8
Cist	7	3	6	8	39	1	3	7
Pithos	39	37	33	57	71	1	7	61

This table indicates that there are a higher proportion of pots of type 5 in the cist graves than there are in the pithos burials. Otherwise, with the exception of types 6 and 7, which are too rare to give a reliable figure, the other types (i.e. 2, 3, 4, 8) are commoner in pithoi. Although it is less common in pithoi than in cists, type 5 is also the commonest of the pottery types in pithoi.

It /

It is closely followed by types 4 and 8. The chief difference in the pottery types between the two grave groups is shown by type 2, which is relatively common in the pithoi but very infrequent in the cists. No distinctive type of pottery can be associated with the cist burials. Pot type 5, which is the commonest type in cist graves, may also be an early type but continuing in use until a later stage of the Argaric culture, when pithoi were common. It can also be inferred that type 2 is a later development because it is infrequent in cist graves and relatively common in pithoi. Types 3, 4 and 8 seem to have been commonly in use at a period when both pithoi and cist burial were practised.

In cist graves, 75% of the occurrences of type 5 pots are in association with daggers, in pithos burials the figure is about 66%. In both pithoi and cists, if it is not associated with a dagger, pot 5 is usually associated with an awl, but in some pithos burials which contain neither awls nor daggers it is found with bronze rings or bracelets.

In cists, pots of type 8 are always accompanied by a pot of type 5. In pithoi the two are found eleven times together, and in fact type 8 seldom occurs on its own. This suggests that it may not have been as important for funerary purposes as some of the other types.

Pots of type 2 are found with daggers of type II in the cist group. In the pithos group it is more usually found with daggers of type III, axes, awls, rings or bracelets.

Stone and Bone: Although several "bracers" have been found at /

at Argar, only three were found in the graves. Two small bracers, each with two perforations, were found with daggers in a cist grave and a pithos. The one in grave 530 was associated with a dagger of group V, and the one from grave 692 with two daggers of groups II and III. The occurrence of bracers together with daggers might suggest that they functioned as whetstones rather than as wrist guards. From pithos no. 769 comes an unusually long "bracer" which is associated with copper rings and bracelets. The evidence, however, is too scanty for any important chronological conclusions to be drawn.

The only two graves containing v-perforated buttons are cist graves 407 (Siret, 1887, Pl.48) and 202 (Siret, 1887, Pl.41). The conical button in grave 407 is associated with a dagger of type III, while the seven pyramidal buttons in grave 202 are associated with an awl and a pot of Siret type 3.

Nineteen pithos graves contain segmented bone beads, and there is a further example from a "destroyed grave". Their more important associations are with bronze rings and bracelets, awls, daggers of type III and pottery of types 4 and 5.

Fish vertebrae used as beads are found in twelve pithos graves at El Argar. Their chief associations are with awls, bronze and silver rings and bracelets, dagger type III, and pottery of type 8, 3 and 4.

2. Stray finds

Objects encountered as stray finds in the settlement area are illustrated on Pls. 23-26 of Siret's Album (1887). They consist of the following objects :-

Metal: /

Metal: Objects not found in the graves but in the settlement are as follows :-

Metal points, usually with a small blade and a long tang, a few barbed and tanged points (Fig.15, 2 and 3).

Chisels, usually long and heavy but with a square cross section.

Saws, with serrations along one side.

Awls, with central thickening, of which there were two examples. This type was not found in the graves. It is known to belong to the reflux horizon. Many other awls were also found.

Pottery: Carinated pot sherds with or without handles (Pl.23), large oval clay plaques with four perforations (Pl.23), a small clay 'reel' (Pl.24, 76), a few pottery spoons, crucibles.

Stone: Stone axes, stone hammers of a type which is frequently found in the copper mines of Portugal (Pl.23, Nos.39-53), twenty-six stone bracers, most of which have two perforations, a few stone bracelets (neolithic?).

Flint: Flint blades, small flint saws, similar to those found in a sickle haft at Mas de Menente.

Bone: Many bone points, needles(?), and beads.

c. Summary

The assumption made at the beginning of the analysis on El Argar grave goods, that there is a difference in the content between the cist and the pithos graves, is justified by the results.

Cist graves can be shown to contain objects typical of the reflux movement and also daggers of an earlier group, halberds, awls, and /

and pots of type 5. Bronze and silver rings are relatively common and when they do occur, they are usually associated with daggers of type III and pottery of type 4, both of which are types common in the pithos graves. This suggests that the cists began as a result of the reflux movement, but continued in use even after the arrival of pithos burial.

The pithoi, besides containing objects which are not found in cists, are especially characterised by the presence of a certain group of objects. These are group III daggers, bronze and silver rings, bracelets, awls, axes, and pottery of types 3, 4 and 8.

The results obtained from an analysis of the material from El Argar must now be checked against the finds from other 'Argaric' sites in the same area.

C. RELATED SITES IN SOUTH-EAST SPAIN

a. El Oficio

A settlement and cemetery site which occupies a good defensive position.

According to Siret (1887, p.194), 71% of the graves at El Oficio are pithos burials. This is less than at El Argar where they formed 80% of the total number of graves. Cist graves at El Oficio form 25% of the total, and earth graves only 4%. At El Argar, cist graves and earth graves each represented 10% of the total number of graves. It is unfortunate that Siret chose to illustrate only thirteen graves, of which eight are cist burials,

out /

out of a total of over two hundred graves found at El Oficio. He does explain, however, that he is illustrating the most important graves. The study of these graves is based on the relative proportions of the objects present in the different grave types.

1. Cist Graves

Each of the eight cist graves contains a dagger and Nos. 9 and 62 contain two and three daggers respectively (note that in both these cases the cist contained two burials) which makes a total of eleven daggers. Of these, five daggers belong to group V, one each to groups II and VI and five to group III.

The dagger from grave 42 is worthy of mention because it is one of the finest daggers in the whole Argar complex. It has a very regular triangular blade, the heel is carefully rounded, and the rivets used in hafting are evenly spaced in semicircular formation. The remains of the hilt indicate that there was a small semicircular opening at its base. This feature can also be seen in some Argar daggers.

As at El Argar, the halberds are confined to cists, where they are found in three out of the eight graves (37%). The halberds from El Oficio belong, with the possible exception of one from grave No. 42, to group II halberds with very splayed ends, comparable to the one from grave 534 at El Argar. The halberd from grave 9 at El Oficio has a straight butt, whereas the others at El Oficio have curved butt ends. The halberd from grave 9 which has a very splayed butt is associated with two type III daggers.

Three of the cist graves contain awls. The awls are twice associated /

associated with type III daggers and once with a type V dagger.

At El Oficio there is only one example of an axe in a cist grave. The axe is of type III and it was found with a dagger of type III.

In the cist graves at El Oficio, silver ornaments seem to be more common than copper or bronze ones. Only two graves contain bronze rings, and four graves contain silver bracelets or rings. Only one halberd grave (No.62) contains rings and bracelets, and these are of silver. In graves 5 and 6, silver rings and bracelets are associated with type V daggers, and in graves 72 and 158, copper rings are associated with type III daggers.

Cist grave 6 contains a silver diadem. At El Argar, diadems were considered a typical feature of the pithos burials. The "diadem" or belt from El Oficio differs considerably, however, from the El Argar type and consists of a long band of silver which has been bent to form a circle, the two overlapping ends appear from Siret's drawing to be riveted together with four small, neatly spaced rivets. The band is decorated by about eight horizontal rows of pricked ornament around it. This technique of decoration was not noticed at Argar itself.

Besides the silver belt, grave No.6 also contains two gold rings which are formed of wire twisted into spiral formation. They are similar to the gold wire ring from cist grave 2 at El Argar (Siret, 1887, Pl.41).

As in the cist graves at Argar, the commonest pot type in the El Oficio graves is type 5, which occurs seven times in five graves.

A vase of type 8 was also found and types 1 and 4 are represented by a total of three examples. A pot of type 2 was found in grave No.12 where it was associated with a vase of type 5, a dagger of type VI and four silver rings.

2. Pithos Burials

If, as Siret suggests, the five pithos graves illustrated are to be considered among the more important graves from the site, it suggests that the phase of pithos burial was impoverished because they contain few grave goods. At Argar, too, there were many pithos burials which contained little more than beads and copper or silver rings.

A dagger was found in only one pithos burial (= 20% of the graves). It was not well preserved. Although the presence of four rivets would assign it to group V, it might be better considered as imitative of the hafting of the swords. The other contents of this grave are all features typical of the Argar pithos burials. They are an awl, a copper bracelet, copper and silver rings, a wooden comb, and vases of types 7 and 8. The comb, if the reconstruction made by Siret can be accepted, is similar to one in grave 245 at El Argar (Siret, 1887, Pl.47).

Three of the remaining pithoi contain silver rings, one contains a silver bracelet, and one a copper bracelet and a spiral ring. Vases of type 5 were found in graves 77 and 137, and a vase of type I was also found in grave 77. Grave No.200 contained a pot each of types 7 and 8.

3. Stray Finds

The one dagger represented is clearly of type III (Siret, 1887, Pl.62/1).

The axe (Siret, Pl.62, No.) belongs to type I which on the Argar evidence should be correlated with the pithos burial period.

In 1913, Siret published a rough sketch of a metal awl from El Oficio, which had a thickened middle portion. This awl type which was also noted at El Argar is known to be associated with the beaker reflux movement.

It is interesting to see a good bracer fragment (Siret, 1887, Pl.62/18) which has three perforations at the one end which is preserved. Another two objects (No.16 and 17) could be interpreted as either bracers or whetstones, but whatever the case, they indicate influence from the Reflux movement.

Discussion

At El Oficio, as at El Argar, there is a difference in grave content between the cist graves and the pithoi, and the cist graves at both sites have similar grave goods. The cist graves at El Oficio seem to be even richer than the cist graves at Argar but, on the other hand, the pithos graves are poorer than at Argar and show none of the purely pithos burial features which were noted there. At El Oficio, where cist graves were commoner than at El Argar, it would be natural to expect an increase in the proportion of objects thought to be typical of cist burials. An examination of the figures reveals that this is, in fact, the case.

Siret records (1887, p.196) that a total of five halberds, fifty/

fifty-four daggers, eighty awls, twenty-four copper bracelets, one silver bracelet, eighty-two copper rings and twenty-two silver rings have been found in the 200 odd graves from El Oficio. Twenty-nine per cent., or about sixty of these graves, are cist or earth graves.

The available information about daggers is as shown in the following table:-

	<u>Number of Graves</u>	<u>Number with Daggers</u>	<u>Number of Daggers</u>
Pithos	5	1	1
Cist	<u>8</u>	<u>8</u>	<u>11</u>
Totals:	13	9	12

Thus, eleven out of twelve daggers (92%) were in cists. Assuming that this limited information is representative of the site, that is, that 92% of the total fifty-four daggers found there were in cists, it is interesting to note the high association of daggers with cist burials. The comparative figure for El Argar was 30%.

Siret records finding five halberds at El Oficio, three of which are known to have been found in cists. On the basis of this evidence, and also of the evidence from El Argar, where all the halberds were found in cists, it is probable that all the halberds from El Oficio were also found in cists. Five halberds in approximately sixty graves indicate that 8% of the cist graves contained halberds. At El Argar, the comparative figure was 7%. Objects typical of pithos burial at El Argar are less common especially copper and silver rings, bracelets, axes, and type III daggers.

b. Fuente Alamo

Siret (1887, p.204), records finding forty-six graves at Fuente Alamo, although in the Album (1887, Pl.68) he actually lists forty-seven graves, eleven of which are cists. Pithoi form 76% of the total number of graves. Siret (Pl.68) referred to each grave but, unfortunately, five of the cists and thirteen of the pithoi had been robbed or destroyed which means that, for the purposes of study, eighteen graves must be discounted. Furthermore, two cists and fourteen urns contained either no grave goods or only pottery, the types of which are not given. The survey of graves from Fuente Alamo must be restricted to thirteen graves, of which five are cists and nine are pithoi. It is interesting to note that of the twenty-three intact pithoi, seven or 30% have been used for child burials.

1. Pithoi

Six of the pithoi contain daggers, four of which belong to group III, one to group V, and one to group II.

Two copper bracelets were found in grave No.23, accompanied by one bone segmented bead. Grave No.8 is perhaps the most interesting with two silver and one copper pendant and various beads which include a copper spiral bead similar to the type found in the pithoi at El Argar, and a segmented bone bead.

2. Cists

With the exception of grave No.25, which contains a pot only, all the cists contain daggers. Those from graves 7, 10, 18 belong to type III. Grave 9 contained three daggers, which represent one each /

each of types I, IV and V. At Argar, daggers of types I and IV were found only in the pithos group. The type IV dagger is, of course, a sword and must be relatively late. The third dagger, though classified as type V on account of its rivets, is perhaps better considered as an imitation of the sword, especially as it has a constriction below the hafting plate which is a characteristic feature of the Argar swords. The dagger from grave 1 is also unusual and although classified as group V it is not typical of that group. Besides its length, it is also unusual because it has four grooves down each face, a feature which never occurs at El Argar and which is rare throughout the Peninsula. The grooves have not been cast, but have been polished into the surface of a normal dagger, as is shown by the cross-section which shows only a long oval section and no midrib or ridge which would have resulted if the grooves had in fact been cast in.

Halberds were found in two graves. The halberd from grave 1 has a splayed butt and a distinct midrib. The four rivets are symmetrically placed in two groups of two. This halberd was associated with the grooved dagger. The other halberd from grave 18 is of a similar type and differs only in having a sharply splayed butt, a wide flat-topped midrib and six less regularly spaced rivets (of silver). It is associated with a dagger of type III.

The only other associated finds from these two halberd graves, with the exception of two small atypical metal bars from grave 1, is pottery and gold. The pottery from grave 1 consists of vessels of Siret type 5 and 6, but the pot from grave 18 is atypical. The gold /

gold bracelet from grave 1 is a massive gold rod bent to form a bracelet, the two ends of which are not joined. This bracelet, according to Siret, contains 25% silver and weighs 114 gm. The gold from grave 18 takes the form of a gold wire bent to form a spiral ring and can be likened to one from El Oficio 6 or El Argar 2.

Cist grave 9 which contained daggers of types I and IV also contained other interesting objects. These were two spiral copper beads, the base of a silver diadem, three pots of Siret type 7, one of which had a copper band around its stem, and eight faience beads. There was a strip of wood bent almost in two. Sandars (private correspondence with Prof. Piggott in 1956) suggested that this may have been fitted to the chalice (pot type 7) as a handle.

3. Summary

These finds from Fuente Alamo, although sparse, do show that the combination does not vary from that established at El Argar.

Of the twenty-three pithos graves (thirteen are discounted because of destruction), six have daggers and seven have copper or silver rings or bracelets; these figures are somewhat less than those obtained for El Argar and a greater poverty in variety of grave goods is also noticeable.

Of the six cists (five are discounted because they were robbed or destroyed), five have daggers, two halberds, two gold, three pots of type 5; these figures compare very favourably with those for the same objects in cist graves at El Argar and even when the inaccuracy inherent in working with small numbers is discounted, the proportions are still such as to indicate a strong cist influence

Grave 9 is so interesting that it must be considered further. Certain objects are found in it which, at Argar, are only known in pithos burials. These are segmented faience beads, daggers of types I and IV, and a silver diadem (the band is probably best interpreted as a diadem from which the projecting disc, familiar from the Argaric examples, has been lost). The other finds are also common in the Argar pithoi. They are an awl and bronze spiral bracelets and ear-rings. The chalice, too, with its curious handle and metal strip, is best paralleled in the east Mediterranean rather than in the reflux movement which seems to have given rise to the early cist grave phase at El Argar. This combination shows that the grave must be considered as contemporary with the pithos graves at El Argar. It also shows that the cist graves continued to be used after the arrival of pithos burying people. Cist graves 1 and 18 are probably fully contemporary with the cist graves at El Argar.

There are three rich burials out of a total of forty-seven at Fuente Alamo. This may indicate that they were graves of successive chieftains. If this is so, the sequence should run 1 - 18 - 9 or 18 - 1 - 9, though on account of the gold bracelet from grave 1, 1 - 18 - 9 is more likely. This reveals the interesting fact that the chieftains' burials (if they are such) occur in cist graves, which may mean that the earlier cist grave people were dominant at that site. This would explain the use of a cist for the late burial in grave 9 which must be contemporary with the rich pithos graves at El Argar.

c. Zapata

This site lies some distance to the north of El Argar and near the town of Mazarron. Thirty-eight graves are known from this site, nineteen of which are pithoi, sixteen cists, and three earth graves. The finds from the graves are relatively sparse and monotonous when compared with the El Argar finds.

1. Cists

Five daggers or dagger fragments were found in the cists, of which two are unclassifiable, two belong to group III and one to group I. This last came from a grave in a crevice in the rock which had no further offerings. Thus it is not possible to determine more closely the chronological significance of this find. The dagger from grave 15 was associated with a bracer (Sangmeister's type, with two perforations and slightly convex sides) and two pots of type 5. The association of dagger and bracer is interesting. The dagger from grave 19 is associated with two pots of type 5. The two unclassifiable daggers from graves 22 and 38 are likewise each accompanied by a pot of type 5; grave 22 has in addition a pot of type 1. Other finds from the graves consist only of an awl from grave 38 and pottery - usually pots of type 5 (seven examples in all), though grave 28 contained a bowl of type 1. Grave 37 is of interest as it contained two stone axes, a feature not found at Argar.

2. Pithoi

Only one dagger has been found in nineteen pithos burials; it belongs to type VI and is accompanied by a vase of type 1. Four of
/the

the graves contain silver rings and two copper rings. One of these last graves also contains a bronze bracelet. There is one awl from grave 23. The favourite pottery type is again type 5 (six examples) but there are also three examples of type 1. The most interesting and useful find is undoubtedly that of the segmented bone beads in grave 8 (together with copper bracelets and copper and silver rings), which must indicate contemporaneity with the pithos period at El Argar.

At Zapata the general impression is one of poverty, but, despite this, both cist graves and pithos graves show the characteristic features distinguished at El Argar. The group I dagger and the segmented bone beads indicate contemporaneity with the pithos graves at El Argar. There is no evidence to suggest a very early date for this site, but the incidence of daggers, vases of type 5, and a bracer would favour a date contemporary with the cist burials at El Argar.

d. Gatas

Gatas, situated only a few kilometres from El Argar, shows a remarkably high proportion of cist burials over pithos. Of the eighteen graves excavated by Siret, fifteen (83%) are cists or excavated in the rock surface and only three (17%) are pithoi. Eight of the cist graves and one of the pithos burials have no grave goods, and two of the cists are accompanied by pottery only (one vessel of type 5 and one of type 1).

Three/

Three daggers have been found in the cist group; one of these is not illustrated, one is a typical example of group II, and the other belongs to group III. The one and only dagger from the pithos group appears to be of group III, but may conceivably belong to group I. All the daggers in the cist grave group are accompanied by awls; this association was also common at El Argar. Grave 11 contains only an awl and a vase of type 5.

The only remaining grave of interest is grave 6, which contains a bead and a footed bowl (not to be mistaken for a chalice, the form of which is considerably more slender).

The very few pithoi yield typical grave goods. In grave 8 the only find was a silver bracelet; grave 2, on the other hand, is a typical rich pithos burial, containing a dagger of group III (or perhaps I), a silver diadem, eight copper spiral beads, copper rings and bracelets, a silver bracelet and rings, beads, a vase of type 2, and an awl.

The evidence from the cist graves is not conclusive, owing to their poverty. The dagger types can be best equated with the cist grave phase at El Argar, but the other finds are also indicative of a later phase, and there are, in fact, no finds which, at El Argar, are characteristic of the cist grave phase only.

The evidence from the pithoi is, on the other hand, definite: features present in grave 2 (silver, diadem, copper spiral beads, vase type 2 and the dagger) indicate a parallel with the later pithos phase at El Argar.

e. Fuente Vermeja

Two of the four graves found at Fuente Vermeja were very badly preserved. The two others are cists, one of which contained a dagger of group III and the other a fragment of a type 5 vessel. Dating is not possible on such little evidence, but it can be said that nothing is found in the cists which would not be expected. It is further interesting to note the find of at least three bracers on the site itself, and several vessels of type 5.

f. Lugarico Viejo

There appears to have been a row of eight cist graves just outside the settlement of Lugarico Viejo; grave 9 was within the settlement; while grave 10-12 were found in shallow rock shelters near the settlement.

Grave 3 contained an awl and a curious dagger with one rivet only. Grave 4 contained an awl. Grave 9 contained a very fine long dagger with only two rivets; it has been classified as group II, but is in fact not typical of the group. Grave 10 yielded a simple axe - certainly not Argaric in shape or proportions. Grave 11 yielded a tiny dagger of group II. With the exception of the dagger from grave 11, none of these finds fits comfortably into the sequence determined at El Argar, and the question arises whether they can be considered as an impoverished variant of the early cist grave phase. The early date is further suggested by the two v-perforated buttons, four probable bracers, found on the surface at the site, and a lack of typical Argar pottery types.

g. /

g. Ifre

Siret claims to have found six graves at Ifre (1887, p.94) but he publishes only five; four of these are certainly pithoi. Grave 1 had a pot of type 5 beside it. Grave 3 contained two bronze rings. Grave 4 was small and contained no grave goods; Siret suggests that it may have been for a child. The existence of grave 2 is doubtful. Apparently Siret found an axe of type III and a pot in the earth above grave 1 and called it grave 2. Grave 5 seems to have been a sort of cist constructed in the corner of a house for a child burial. The grave contained one hemispherical bowl, the inside of which has a design of a cross, the four quadrants so produced being filled with horizontal lines. This pattern was produced, according to Siret, by "le lisage". The finds from Ifre are not very informative, but, taking into consideration the axe type, the bronze rings, the pottery type and the predominance of pithoi (66%), the settlement may be considered to be at least partly contemporary with the pithos grave group at El Argar.

h. La Bastida de Totana

It is now necessary to consider an important site on what must be approximately the western border of the Argaric territory; that is La Bastida de Totana, in Murcia.

Martinez Santa Olalla (et. al., 1947) has dealt at length with the history of the site and with the lamentable lack of proper excavation, which led to the loss of a considerable amount of valuable archaeological material. It is to be regretted that Santa /

Santa Olalla himself did not publish the details of his own excavations and finds more fully. Any analysis of the graves from the site must be restricted to generalities, as insufficient information is available regarding the type of metal objects, etc., found. It must be remembered too that many of the graves examined by Santa Olalla had been robbed in the last century.

There are 102 graves from La Bastida. Seventeen (16.7%) are cists and eighty-five (83.3%) are pithoi. The percentage of cists is even less than at El Argar (where it is 19.7%). The analysis below is based mainly on the seventeen graves which contained metal objects (three of them were cists), as the majority of the graves contained mainly pottery, beads, or nothing at all. (The contents of each grave are shown in table of Martinez Santa Olalla et al., 1947).

A total of eight daggers was found, in three cists and four pithoi. Thus, as at El Argar, the percentage of cist burials with daggers is higher than the percentage of pithoi with them: three out of seventeen cists (17.6%) as compared with four out of eighty-five for pithoi, which is only 4.7%. The El Argar figures were 66% for the cists and 38% for the pithoi.

Cist grave 4 yielded a small triangular dagger of type II (Martinez Santa Olalla, 1947, p.68 and Fig.6, No.11). Two daggers (op. cit., Fig.6, Nos.6 and 8) are each supposed to have been found with a whetstone. In the table (op. cit., pp.117-119), however, only one grave (grave 38) is shown to have a whetstone; thus, dagger fragment 6 or dagger 8 could have come from this grave, which is /

is a pithos. As the word "punal" is used and there is no suggestion that it is fragmentary, it would be legitimate to assume that dagger 8 did in fact come from grave 38. This dagger could be classified as type III, which is a normal dagger type for a pithos burial. A close scrutiny of the dagger in the pithos grave photograph (op. cit., Pl.B) suggests that it may be No.2 of Fig.6 which belongs to group III. This again would indicate the association of a group III dagger with a pithos burial. This leaves the remaining five daggers and two fragments illustrated in Fig.6 unaccounted for (making a total of nine, though only eight are reported to have been found; see Martinez Santa Olalla, et al. 1947, p.68). Dagger No.1 in Fig.6 is of the group I type and can be associated with the pithos phase at Argar; it would therefore be reasonable to expect that it comes from one of the pithoi. Similarly, dagger No.10 in Fig.6 is a typical example of group V, which is of the early cist phase at Argar; one may not be far wrong in attributing it to cist grave 15 or 76. Dagger 4 of Fig.6 is not so easy to attribute. The association of a dagger and a bracer in grave 38 should be noted; it may give further indication that bracers are in fact whetstones.

Three axes were found, all in pithoi, which confirms the evidence obtained at El Argar. The axe from grave 52 (op. cit. Fig.5, No.1) is of type III and is associated with two daggers, copper and silver rings, segmented bone beads and fish vertebrae (these last two objects being typical of the pithos phase at Argar). The axe from grave 37 (op. cit., Fig.5, No.2) was accompanied by an awl /

awl, silver and bronze rings, a bronze bracelet, beads, three pots, a fragment of an ivory(?) bracelet, and two small ivory(?) plaques with four perforations down the middle (op. cit., Fig.13, Nos.3-5). Finally, from grave 56 come an axe and two pots.

Awls were found in seven graves, only one of which was a cist. The number is too small for any deduction to be made from this.

Rings and bracelets are found exclusively in pithos graves at La Bastida: seven pithoi have bronze rings and five have silver rings; three have bronze bracelets and one a silver bracelet. The proportions are lower than at El Argar, where bronze and silver rings and bracelets together were found in more than half the graves.

As has been already mentioned, one grave at La Bastida (grave 52) contained both segmented beads and fish vertebrae - features of the pithos phase at Argar. These were associated with two daggers, an axe, and various beads. Segmented beads were also found in grave 80, accompanying a dagger, an awl, four pots, and various beads.

There appear to be thirty-three graves (including four cists) which contained only pottery: no details are available about the types present in each tomb, but if one can judge from the vessels illustrated (op. cit., Fig.7) there would appear to be a predominance of vases of Siret type 5, though types 1, 3, 4 and 7 are also represented.

Twenty-nine child burials were found at La Bastida. This represents 28% of the total, and this figure is not unlike that obtained at Fuente Alamo, where a high proportion of child burials was /

was also noted (30%). At La Bastida all but two were found in pithoi; one was found in a cist; and one was an "esqueleto sobre losa".

The following information has been elicited from this site. The burial rite in pithoi is even commoner than at El Argar, and objects of the cist grave phase at El Argar show a corresponding decrease - there are fewer daggers, no halberds, no v-perforated buttons, no gold, and daggers of the early groups V and II are not common. Certain features typical of the pithos phase have been noted - segmented beads, fish vertebrae, and a group I dagger. Other finds, such as silver and bronze rings, and axes are also more typical of pithos burials at Argar.

These conclusions tend to be confirmed by the finds from the 1927 excavation (op. cit., Pl. XLIII) where an axe of group I was found and also a dagger, the hafting plate of which is very reminiscent of the swords in group IV. It would seem to be a reasonable statement then that La Bastida begins later than El Argar.

The last group of sites to be considered in this survey of pure Argaric culture are situated to the north of Murcia in the Sierra de Orihuela. The sites here were excavated between 1902 and 1908 by P. Juli Fergus, but not published until 1937, when Ballester Tornos edited a series of paper by Fergus (Ballester Tornos, 1937).

i. San Antonio de Orihuela

At San Antonio de Orihuela (op. cit., p.13) the graves of the bronze age could be divided into four types: tumuli, only two-three metres /

metres high and three-four in diameter; "clots", or earth graves; pithoi; and cists. The grave goods from these graves are illustrated in Pl.V and VI (op. cit.) and beyond noticing the presence of typical Argaric culture material (pottery, especially like Siret type 5, halberds with a midrib, long and short riveted daggers, axes with narrow butts, bracelets, awls, and arrow-points) one cannot comment.

From a tumulus grave at Algorfa came two silver bracelets, a necklace of seventy-three gold beads, a riveted dagger (group III?), an awl, and a bone point.

A "grave" in San Antonio contained a vase with large rounded belly, a short flaring neck, and a handle - similar to those found in the Valencia region - together with two gold rings.

j. Callosa de Segura

The graves at Callosa de Segura can be divided into three types: tumuli, cists, and pithoi.

The tumuli contain a few sepulchral chambers built of stones, within which lay the burial in a crouched position. Although the grave finds here were poorer than those from San Antonio and this tumulus grave type was wont to contain only pottery and perforated shells, nevertheless some of the graves did contain silver rings, metal points, halberds, copper awls, bracelets, buttons, and various other objects. One grave contained two silver bracelets (or rings?), a massive silver bracelet, two gold rings, a dagger, and a copper axe (of type III?). Various stone and flint implements were apparently also common.

The /

The pithoi were frequently in a ruined state.

Only four cists were discovered. This grave type, according to Furgus, usually contained a halberd or dagger. One cist seems to have contained a copper axe, a stone axe, three spirals, and one ring of silver; the grave was badly disturbed. "Wrist guards" too were found in this necropolis.

It will be appreciated that these last two sites must be borderline sites, between pure Argaric culture and some other culture. There is the appearance of a new grave type, the tumulus, and a new type of pottery more related to that of Valencia than to that of El Argar. There is a decrease in the proportion of copper or bronze and silver objects and an increase in stone and flint implements. Gold too appears to be more common and the gold necklace from Algorfa is certainly curious.

Argaric features are also present: halberds, axes, daggers, copper and silver bracelets and rings are found; the typical burial type at Argar, the pithos, is present; and finally one must mention v-buttons and bracers. These last, together with the halberds and the high proportion of gold objects, suggest that these necropoli were in use at a period corresponding to the cist grave period at El Argar and continued in use after the arrival of the pithos burying people.

D. DISCUSSION ON THE ARGAR CULTURE IN SOUTH EAST SPAIN

The survey of Argaric sites in south-east Spain was confined to the study of grave goods because little information is available regarding finds from the houses.

There /

There were two main types of graves in use during the Argaric period; these were the cist or earth graves and the pithoi. It was thought that there might be a chronological difference between these two grave types at El Argar and an analysis of their contents confirmed this. It was discovered too that similar differences could be distinguished at other Argaric sites in the neighbourhood and that grave goods, regarded as typical of the pithos or cist graves, were always found, with few exceptions, in the same type of grave elsewhere.

Some finds from the cist graves have already been discussed with regard to the reflux movement. These were v-perforated buttons, bracers and gold. Another feature occurring in cist graves and known to be connected with the reflux movement in other regions was the riveted dagger with the small projection at the heel, the parallels of which will be discussed later.

The suggestion that the early settlement at Argar owed much to the reflux movement was further strengthened by surface finds, which included awls with middle thickening, and a bone object decorated by a ring and dot ornament.

In view of this evidence for the reflux movement at Argar, it is also possible that the halberds, riveted daggers, and perhaps the copper rings and bracelets arrived by the same route. The evidence for this will be discussed later. It is sufficient to notice that the Argar halberds differ considerably from the Portuguese halberds and cannot be regarded as closely related and also that rings and bracelets show a mainly easterly distribution in the Peninsula.

The finds from the pithos graves cannot be related to finds typical of the reflux movement. The distribution of pithoi and their typical finds is mainly limited to south-east Spain. Their parallels will be discussed later, but it is suggested that they are of east Mediterranean origin.

A group of finds typified mainly by type III daggers, awls, bronze or silver rings, bracelets, and an occasional axe, were found in both types of graves at El Argar and other sites. It is suggested that these must be regarded as later than both the pure cist and the pure pithos grave groups because they occur in both grave types and show contact with both groups. They cannot be regarded as transitional between the two groups because the pure pithos has very distinctive characteristics which cannot be derived from this mixed group. Also the custom of pithos burial is so distinctive and of obvious east Mediterranean origin that it must be considered as arriving with the other exotic features of pure pithos burials - diadems, segmented beads, chalices, etc. The grave from Fuente Alamo shows that cist graves were still in use when the people who brought the custom of pithos burial arrived. They seem to have maintained their distinctive character for the first few decades(?) but later, perhaps because they were cut off from their east Mediterranean homeland, they seem to have mixed with the local inhabitants. This fraternization between the two groups is represented by the innumerable cist and pithos graves which contain little more than a few beads and bracelets with an occasional dagger or axe.

The Bronze Age finds from the other regions of the Peninsula must now be examined in order to see how far each region was indebted to Argar, or how far it can be considered an independent local culture.

E. OTHER SITES IN SOUTH-EAST SPAIN

a. Almeria

Excluding metal objects of obviously earlier date, there are thirty-two graves with metal in Almeria (see Leisner, 1943). Eight of these contain only awls and thus cannot be used in this analysis. One grave contains an Argaric axe fragment, which it is impossible to classify further. Another grave contains seven copper beads. A cave contains an axe and a dagger which cannot be studied because they are not illustrated. All of the remaining twenty-three graves contain copper rings, the majority of which seem to be large enough for bracelets, but nearly all of which, curiously enough, have open ends. This is a feature not common at Argar, where the ends usually overlapped and frequently formed a rough spiral.

The majority of graves involved here are collective passage graves, though the find from Curenima (Leisner, 1943, p.13) seems to be from a large cist. Grave 33 at Los Millares yielded six open arm rings, a piece of sheet copper twisted into a spiral, and two stone beads (Leisner, 1943, Pl.24). One of the bracelets is decorated by incised lines near the two ends.

Summary /

Summary

Little can be said regarding the significance of the finds. The fact that they are found in passage graves suggests that these graves continued in use until Argaric times. The poverty of metal objects in this area is in contrast to the rich finds from El Argar. This may be an indication that El Argar monopolised the copper deposits in the area.

The form of the bracelets indicates that they must have been made from a rod of metal bent to form a suitable shape. There is no evidence, even at Argar itself, that the bracelets were ever cast in a closed mould. The decoration of the Los Millares bracelets is an unusual feature not found at El Argar and suggests that these bracelets may be late bronze age in date.

b. Granada and Jaen

There are fifty-five graves in the area around Rio de Gor which contain copper (see Leisner, 1943). Of these, nineteen contain awls as the sole metal object, one contains beads and six contain amorphous fragments of metal, leaving twenty-five graves which cannot be considered in this survey.

Riveted daggers are found in eleven graves, a notched knife in one, and a tiny knife with one rivet hole is found in another grave - the latter associated with an awl.

The graves which contain riveted daggers are as follows:
La Gabiarra 64, La Gabiarra 86, Cejo de las Cabrerizas 111, Hoya de los Madrigueros 20/2, and seven graves at Los Eriales (Nos. 4/1, 17/3, 17/5, 17/7, 19/8, 19/9, 19/10). In many cases it is not easy to classify /

classify these daggers, owing to the tiny size of the illustration, but the dagger from Los Eriales 17/3 obviously belongs to a type I, which was restricted to the pithos phase at Argar. It is accompanied by two awls, a copper ring, and a type 5 vase. The dagger from La Gabiarra 64 is of type V. Daggers of type III seem to be found in the remaining graves, four of which also contain type III daggers.

Of the four axes found in these dolmens, only two can be considered as Argaric; the others are of an earlier type. It is not possible to classify the Argaric axes further owing to the lack of adequate illustrations. A copper adze and an axe of early type are associated, in their respective graves, with copper rings, and the adze is further associated with silver rings.

Awls are found in thirty-one of the thirty-five graves, but this figure is of no significance, because awls were common in earlier periods.

Awls are found six times with Argaric points. These are points with relatively long tangs and small blades, of a type which was found in the settlement at El Argar.

Awls were also found with a chisel, a fragment of an Argaric axe, and eight riveted daggers, one of which is certainly of type II or III, probably the latter.

Twenty graves contain copper rings or bracelets. Of these, five contain only copper rings. Associated finds include awls and beads.

Argaric type points are found in six graves. Only one grave contained /

contained a barbed and tanged point and it was associated with a dagger of type II or III.

Simple Argaric copper points tend to be associated with daggers of gr. II and III. Points are also found with awls.

Perhaps one of the most interesting finds is of silver rings in three graves, one of which also contained a silver bracelet.

Bracers are not infrequent.

Vases of types 1 and 5 are the commonest, but type 7 chalices are found in seven graves. Other forms are present in smaller numbers.

A few finds from the unpublished site of El Zalabi, Esfiliana, Gaudix, are in Granada Museum. The site appears to have been a cemetery of cist graves. Finds are known to include a simple halberd and a short sword. The latter had at least four rivets which have been lost by corrosion.

At Sierra Elvira, Atarfe, bronze axes and silver bracelets were found, though whether in a hoard or a grave is not known (Tarradel, 1947/8, p.227). It was also in Atarfe that an unassociated bronze sword was found.

Another site with cist burials is recorded in a seventeenth century account of a search for the martyrs' bones near the sanctuary in Baeza (de Bilches, 1654, and Sanchez Canton 1929). The finds appear to have included pottery, awls, silver bracelets, spearheads (= knives?), arrowheads and a riveted dagger. The finds certainly seem to be typical of Argar and, as such, form an interesting addition to the number of cist graves known from Granada.

Mergelina's /

Mergelina's excavations of dolmens and a cave at Montefrío, Granada, have yielded several long, tanged points of Argaric type (class V), a barbed and tanged point from the cave, and daggers of type III (Mergelina, 1941/2). A short riveted sword of group IV was also found. Cabre in earlier excavations of a dolmen necropolis at Monachil (Sierra Nevada) found several riveted daggers, two copper bracelets, a finger ring and two awls (Cabre, 1922). Each of the dagger types V, III and I was represented by two examples from this site. The daggers of group V are rather longer than is normal in daggers of this type at El Argar. More recent excavations by Tarradel (Tarradel, 1947/8, p.226-231) show that burial in pithos was also known. Winged beads were found at this site (Bosch Gimpera, 1932, p.179, Fig.129).

In a cist grave at Pago del Sapo, Almunecar, on the coast between Almeria and Malaga, a vase of Siret type 5 and a short riveted sword (classified as group IV, Eguaras, 1945, p.116, Pl.XXV) were found.

Finally, mention must be made of a stray find of a sword (group IV) at Montejicar in north Granada; and also at Montejicar, an Ecijar type halberd was also found.

An unusual burial in a cist was found at Quesada. The cist seems to have been situated in the corner of a house, and contained the remains of two adults and one child. The child was accompanied by a fossil plant, one adult by a dagger, an axe and an awl, and the other adult by an axe only. The awl is large and square sectioned, the dagger is of type I. The two axes are of types II and III.

Summary /

Summary

There are no sites in Granada or Jaen which can be compared to the Argaric settlements of north-east Almeria and Murcia, but there is evidence of Argaric influence in the area.

Evidence for the early phase at Argar is not abundant but is supplied by the halberd grave at El Zalabi, the finds of bracers and early daggers in the Rio de Gor graves, and the winged beads from Montefrio. An awl with central thickening was also found in a Granada dolmen (Siret, 1913, Fig.47, p.302).

There is more evidence for the later phase at Argar. Type I daggers were found at Rio de Gor, Montefrio, and Quesada, and both long and short swords were found at El Zalabi, Atarfe, Pago del Sapo and Montejicar. Axes and silver bracelets are also found at a few sites (e.g. Quesada and Rio de Gor). These finds are not sufficient, however, to be considered as evidence of large scale penetration of, and settlement in, Granada and Jaen by people from the area of El Argar. The majority of the finds probably represent trade contacts between the local megalithic population and the Argar culture (i.e. Rio de Gor area, Montefrio, and Monachil) during both phases of the Argaric cultural sequence. The cist graves of El Zalabi, Pago del Sapo and Quesada, which contain typical Argaric objects must represent some more direct contact with El Argar, though the scattered nature of the graves suggests that they may not be more than the graves of mineral explorers or traders.

Finds of Argaric pottery at Pueblo de Don Fadrique, Guadix, Caniles, Molinos de Viento and Valle de Lorca (Murcia) should be regarded /

regarded as evidence of trade rather than of settlement from Argar.

c. Murcia

A grave from Puerto Lumbreras contained bronze rings, shell beads, a vase of type 5, a bowl of type I, and a buckle - this last is naturally a later intrusion.

Another grave from the same region contained two vases of type 5 and a dagger of type III. Unfortunately, no details are available concerning the grave itself.

A grave from Velez Blanco in the northern tip of the province of Almeria, contained three vases of type 5, two bowls of type 1 and two daggers, besides shells, two bone points and a small stone adze. The daggers are of groups V and III.

The stray find of a class I axe was also noted from this region.

From Monte de Santa Catlina (Segura basin or Maratalla valley?) comes a riveted dagger of type III and an Argar axe of type II; but no details are available concerning the nature of the site.

Cuadrado (1948) has published a study of the distribution of Argaric sites in Murcia. He finds that they are concentrated along the principal rivers (Guadaletin, Segura, Mula, Pliego, Argos, Moratalla and Taibilla). Ifre and Zapata are among the few sites situated near the coast, and there is a curious lack of any kind of settlement in the Sierra Almenara behind Cartagena, a Sierra which is rich in mineral resources. Cuadrado shows, too, the extraordinary concentration of sites along the Moratalla and Taibilla rivers /

rivers in the south-west corner of the Province. There is, however, no corresponding density in the neighbouring provinces of Albacete and Jaen and Pueblo de D. Fadrique appears to be the nearest site. Unfortunately, this survey is not accompanied by details of the finds from each site, and hence no information can be obtained with regard to the date and relationships of any of these sites.

The information available from Murcia is too limited to allow any definite conclusions to be drawn. There was probably contact with Argar during both phases of occupation noted there. Cuadrado's maps suggest that the Argaric occupation of Murcia was quite intense but further details are necessary before any detailed study can be made.

d. Albacete

A curious bronze age group seems to have existed here, which is characterised by burial in small caves, the entrances to which were covered by a tumulus. Such tumuli are known from La Penuela, Cerrico Redondo, and Dehesa de Caracolares, all in the region of Chinchilla and Monte Alegre.

The grave of La Penuela contained a dagger of type III, a barbed and tanged bronze arrowhead (a type known from the settlement area at El Argar), part of a stone axe, a bone point and arrowhead and a vase (of type 5?) and a large ovoid shaped urn, decorated by four rows of lugs.

The grave at Caracolares contained two elongated bronze points of a type common in the dolmens of Granada and Jaen, a barbed and tanged bronze arrowhead, a type II dagger, two awls, pottery, a bone point /

point, shell beads, stone axes, etc.

Neither of these assemblages is typical of Argar, only the daggers being typically Argaric. Even the points, with the exception of the barbed and tanged ones, are not of the usual Argar type, but related rather to points found in the dolmens of Granada and Jaen. Besides, points were never found in graves at Argar. The limited dagger evidence can only be interpreted as a relationship with the later phase at El Argar. The use of a tumulus for burial was noted at S. Antonio de Orihuela and never in Argar.

In the previous sections of this chapter the cultural sequence at El Argar and similar sites in the same region and neighbouring areas have been discussed. It is now necessary to consider the other areas of the Peninsula in order to discover how far the use of the term Argaric bronze age can be applied, and also the extent of the development of local cultures. The areas to be considered have been grouped into the major regions - Valencia, Cataluna, south-west Spain and Portugal, the Tagus area and Beira, the northern regions and finally the Meseta. A list of the more important sites will be given for each area and some of the more significant finds from them will be mentioned, only in exceptional cases will full inventories be given. This will be followed in each section by a short discussion on the significance of the finds in that particular area. The relationships with other parts of the Peninsula and with other countries will be considered in the main section entitled Discussion.

F. VALENCIA

a. The sites and finds

An interesting series of settlement sites is known from the provinces of Alicante and Valencia, all of which have been referred to Argaric or Bronze II. Owing to the complex nature of the sites and finds, it is necessary to study each site rather than the metal objects as a group.

Cabezo Redondo, Villena, Alicante.

A settlement site, about two kilometres north-west of Villena, the houses are partly stone built rectangular or sub-rectangular in plan. Burials were apparently in cists (Soler Garcia, 1949) or in small caves (Soler Garcia, 1953).

One house yielded an awl and the fragment of another.

Another hut yielded the following :-

Metal: a dagger (group III), two fragments of a smaller dagger, six barbed arrowheads with short tangs (not a common type at El Argar) (see Siret, 1887, Pl.26, Nos.51 and 52), a gold ear-ring.

Elsewhere at the same site the finds included :-

Metal: a silver ring, a spiral gold ring.

Pottery: little typical Argaric pottery. Carinated vessels but with the carination too high to allow a comparison with Argar pottery. Two vessels - a deep bag-shaped bowl with a small handle near the rim and a deep bellied pot with a short neck and everted rim, supplied with a big handle. A vase, shaped like a handled beaker, decorated on the outside by rows of tiny pellets. A twin vase, both parts shaped like beakers and joined in the lower part of the /

the body and also possessing a sort of bridge handle between the rims.

Stone: a wrist guard, small flint sickle blades.

In a pit (= earth grave?): an axe, classified as a splayed axe and fragments of Argar pottery (Evan's private notes).

Mas de Menente, Alcoy (F. Ponsell, 1926; Pericot and Pousell, 1928).

A group of prehistoric huts was found on the southern slopes of a mountain, near Alcoy, the walls of the huts were stone built and plans were rectangular or sub-rectangular. There is no evidence of graves. The finds were :-

Metal: an axe, typical of type I, two group II daggers and an awl.

Pottery: remarkably abundant, but few of the pots could be termed Argaric. Some examples of type 5. A characteristic pot form was the beaker with a handle; other types consist of wide, shallow, hemispherical bowls, with or without tiny handles below the rim, deep urns or storage jars, and cylindrical pots.

Stone: stone axes and querns, a possible bracer.

Flint: a curved sickle haft fitted with several tiny flint saws which showed signs of gloss, leaf-shaped arrowheads.

Bone: bone points and spatulae.

Carbonised grain was also found.

Mola Alta de Serelles (Botella Candela, 1926).

Stone-built defensive and house walls were found, the latter being rectangular in plan. Finds include :-

Metal: a small corroded metal point.

Pottery: /

Pottery: a twin vase joined throughout its height, deep hemispherical and bag-shaped bowls and storage jars.

Stone: stone axes, bracers, a broken mould for stone axes, only the splayed cutting edge is preserved and the type of butt is not known. The axe type does, however, look rather similar to the type found at Cabeza Redondo.

Flint: small flint saws.

Sierra Gorda

Apparently a settlement site and a tumulus (museum label).

Finds on show in the ^{Alicante} Museum are :-

Metal: a copper awl.

Pottery: abundant pottery, but few examples typical of Argar (type 5 is represented), deep hemispherical and bag-shaped bowls, storage jars, cylindrical pots and pots somewhat similar to Argar style 3 and handled beakers.

Els Dubots

The finds from this site consist of a type II metal dagger, stone axes and adzes, flint blades and saws and fragments of stone bracelets, all of which were surface finds.

El Islote de la Torre, Campello.

According to Evans (private notes), the metal from this site comes from cist graves. The finds are :-

Metal: three daggers (two of group III and one of group II), a splayed axe, a fragment of a saw and two awls.

Pottery: a carinated pot with a handle and four small pellets or lugs above the handle, bag-shaped pottery with small mouths and everted /

everted rims (like Siret type 3), shallow bowls, deep bag-shaped bowls, and some pottery decorated with criss-cross pendant triangles (similar to Cabeza Redondo, Villena) and a sort of sun motif (similar to Castillarejo de los Moros).

Stone: a very fine waisted bracer with six perforations (or more), stone axes.

Flint: flakes and saws.

Monte de Barsella, Torremanzanes.

Metal finds from this neolithic cave (see p. 60) were :-
a riveted dagger of type II, five awls, two chisels and two blades of copper, and three silver rings.

Fontera Zarzo, Crevillente.

The finds from this grave, which are now in a private collection in Badajoz, consisted of an axe or Argar type III and a knife blade. No details of the grave type are known.

La Atalayuela, Losa del Obispo (Ballester, 1940-8, p.101-113, Alacer Grau, 1945, p.159-163, Pla, 1929-45, p.380, Pla, 1946-55, p.202).

This was a settlement site with some probable graves, destroyed by treasure hunters. The finds, now in Valencia Museum, consist of :

Metal: a halberd with a curiously narrow butt, another dubious halberd, a dagger of group III and a much corroded point - which is probably of Argaric type.

Pottery: two sets of twin vases, one set is joined together for the whole height of the pots, and this part is projected above the level of the rims, it ends in a flat disc of clay, placed at right angles /

angles to the projecting support. A rough sun motif is incised on this disc. The other set of twin vases is joined at the zone of greatest width in the belly and again by a broad handle connecting the two rims. Other pottery finds include deep hemispherical bowls, storage jars and a beaker-shaped cheese strainer.

Stone: a stone axe.

Flint: flint saws (sickles?).

Bone: a bone point.

Castillarejo de los Moros, Andilla (Fletcher Valls and Alcacer Grau, 1958, Pla, 1946-55, p.201).

A settlement site with remains of stone built walls, situated in the Cerro de las Cabras, has yielded the following finds :-

Metal: two riveted daggers of group II.

Pottery: a sherd decorated with the eye motif, handled beakers, deep and shallow hemispherical bowls, a shallow bowl with a row of pellets around the rim on the outside, a cheese strainer, a curious handled sherd, with a small bowl-shaped projection attached to the inside (Fletcher Valls, Alcacer Grau, 1958, Pl.VIII, No.7). Sherds decorated by slashed cordons, another sherd with four small lugs, a feature which the authors say was also noted at Benipri (Belgida - Jornet Perales, A.P.L. 1928, p.91, Fig.8). There are also the usual storage jars.

Stone: a whetstone with two perforations, two fossil plants similar to the one found with the child in the grave at Quesada (see p. 389).

Flint: two flint saws.

Bone: /

Bone: bone points and metatarsal bones.

Montanyeta de Cabrera, Vedat de Torrente (Fletcher Valls and Pla Ballester, 1956).

A bronze age settlement site. The finds were :-

Metal: six awls and six points, two of which were barbed and tanged.

Pottery: bowls, some with handles, handled beakers, large storage vessels, a cheese strainer, a few decorated sherds including a handled beaker decorated by coarse hyphenated ornament.

Stone: querns, an adze(?), bracers or whetstones.

Flint: saws, knives, and flakes.

Bone: awls, and spatulae of horn and bone.

The carbonised remains of seeds, acorns and esparto grass have also been found.

Els Germanells, Rafelbunol.

Among the few finds from this settlement site were :-

Metal: a simple Argaric point (though lacking the long tang usual in Argaric points), a tiny metal awl.

Pottery: shouldered bowls and large storage vessels.

Flint: several flint saws, hundreds of disc-shaped beads.

There remains a group of sites at which no metal has been found, but which deserve mention because they are obviously related to the sites mentioned above, as is clearly shown by the pottery types.

Tossal Redo, a settlement site in Bellus (Tarradel Mateu, 1958, p.111-120). The finds include :-

Pottery: deep and shallow hemispherical bowls and large storage /

storage jars (including a type similar to type 4 at El Argar, clay loom weights.

Stone: a possible bracer.

Flint: small flint sickles.

Bone: phalange and metatarsal bones.

Puntal de Cambra, Villar del Arzobispo.

A settlement site with remains of stone built house walls, both sub-rectangular and sub-circular in plan. The finds consisted of :- handled beakers, large storage jars with slashed cordon decoration and bowls, sometimes supplied with handles below the rim (Alcacer Grau, 1954).

Pena de la Duena, Teresa.

A settlement site with remains of stone built walls. Three earth graves were also found, but these gave nothing more than pottery.

Pottery: large storage jars decorated by slashed cordons, vessels provided with handles, and two small crucibles not unlike those found at El Argar (both of which contained concretions of copper).

b. Discussion

It will be obvious from this brief survey that there are very few features in the bronze age of Valencia and Alicante which can be truly termed Argaric. It must be remembered, however, that most of the finds from Valencia are from settlement sites, and these may differ considerably from the objects used as grave goods. This has already been noted at El Argar, where objects such as points and chisels, which were found in the settlement, were never found in graves /

graves. To compare settlement finds in Valencia with a scheme worked out for graves at El Argar is only justified by the lack of grave finds in Valencia. The Valencian finds must also be compared with finds from the settlement at Argar.

Metal: with the exception of one axe from Mas de Menente, which is obviously related to type I axes, there are no features of the metal industry which can truly be called Argaric. The other axes belong to the splayed class and do not have the characteristic narrow butt of the Argaric axes. The halberd is also unlike the Argaric halberds. The daggers are usually of groups II or III. Group II is, as will be appreciated from map XVII, scattered down the east coast of Spain. It is also found in south Spain. Group III daggers are the commonest type of riveted dagger in the Peninsula. With regard to the points, generic parallels with Argar may be seen, but no specific parallel can be quoted, and even the barbed and tanged arrowhead, which is a relatively common type in Valencia and its hinterland, is less common at Argar than the simple point. The points also differ in size between the two areas, those from the Valencia tend to be remarkably small. In Valencia no silver objects have been found and in Alicante the number is very restricted. These differences indicate that Valencia was not dependent on the Argar culture for its supply of metal objects, as the megalithic people in Granada seem to have been. Besides, there is evidence for an indigenous metal industry (moulds and crucibles) in Valencia.

Pottery: the pottery types, too, are very different. There are few true Argaric pots and these are restricted to the southern parts /

parts of Alicante. Otherwise the shouldered bowls in Valencia have a gentler carination, which is usually situated higher up on the vase, than the Argaric pots. The "beaker" forms are squat pots with wide full bodies, a shoulder and vertical necks. The not infrequent use of handles in this type of vessel contrasts sharply with those at Argar, where handles are rare. They may relate back to the pots with button handles in Cataluna. Twin vases were found at three sites in this area and, although the vases differ among themselves, the common denominator is the idea of twin vases. Large storage jars, whether rounded pots with small mouths (not unlike type 4 at Argar) or deep, hemispherical bowls with lugs below the rim, are also a common feature at all sites. Sherds of pottery decorated with eye motifs, etc. suggest influence from earlier cultures, the descendants of which probably still survived in the area.

Stone: stone axes seem to be more common than in the Argaric sites. The presence of stone bracers at several sites may indicate influence from the reflux movement. The use of composite sickles is a feature of at least four Valencian sites, but it is also known at Argar, Oficio, Fuente Alamo, and Zapata.

Childe (1951) has discussed the Mas de Menente example in relation to the sickle type in the east Mediterranean.

Bone: bone points and spatulae also seem to be more common in this region than at Argaric sites, but they were also found to be common in the area during neolithic times. The presence of metatarsal bones and phalanges at two sites may not be insignificant even though they are not perforated or decorated, because phalanges and /

and long bones were very common in this area in early bronze age times.

Architecture: defended settlements, enclosing stone built houses, are common in both Valencia and south-east Spain, but insufficient information is available, with regard to defensive measures, building techniques and plans, to be able to decide if there is any relationship between the two areas in this respect, though, in view of the evidence from the metal and the pottery, this is unlikely. The use of rectangular huts may be an innovation, as earlier bronze age cultures in the Peninsula seem to have preferred circular structures (for example the graves at Los Millares), but a rectangular structure is reported from Siret's excavations at Los Millares.

Burials: of the few burials known, none is in pithoi, or cist graves. They tend to be in caves or in earth graves.

To conclude, it would seem that Valencia had its own metal industry and this, combined with individual pottery styles, must represent a local culture with little relationship to Argar.

The poverty of reflux features in the area suggests that this movement played little part in the formation of the Valencian bronze age culture. It may have had some relationships with the North, as is suggested by the handled beakers, but as the button-handled bowls in Cataluna are most probably another result of the reflux movement, the handled beakers of Valencia may merely represent a later and slower movement than the reflux, in a southerly direction. It is also suggested that the Valencian bronze age owed much to the earlier inhabitants /

inhabitants of the area. This is indicated by the eye motif, the phalanges and the burial in caves.

G. CATALUNA

a. The sites and finds

The biggest known series of metal finds comes from the 210 dolmens studied by Pericot (1950). Thirty-eight of these contained metal. This is, however, a remarkably small proportion when it is considered that this figure must represent all the metal deposited in these graves from the earliest dolmen period until the Argaric bronze age. The finds consisted mainly of rings (sixteen graves) and awls (thirteen graves), only two graves contained daggers. The unpublished dolmen of Vallromana near Barcelona also contained a tanged dagger. Other finds from the dolmens consisted of beaker ware, button-handled pottery, and v-perforated buttons, while a fragment of metal from the dolmen of Devesa in Palau, which is situated near the coast, was probably silver.

Several caves in Cataluna have produced material which can be assigned to this period. The following is a list of them with a note of the more important finds :-

Rocallaura, Tarragona : a tanged dagger, v-perforated buttons.

Cueva M at Arboli, Tarragona (Castillo, 1947, Fig.567) : a Tagus axe, and a trapeze-shaped axe.

Coveta de l'Heura, Tarragona : an awl, a small metal tube, an ingot of copper, an amorphous mass of metal, which Vilaseca thought might represent /

represent exploitation of a nearby small, surface deposit of copper (Vilaseca, 1952, p.128), a crucible, v-perforated buttons, flint arrowheads and pottery.

Cueva San Llorens, Sitges : a copper ingot.

Cova del Pany, Panades : the excavators of this cave recognised three levels (see p.14). The uppermost level was considered to date to Argaric times. The following metal finds are alleged to have been found in the middle layer (Martin Grive, 1927-31, p.19ff): a Tagus axe, a Palmela point, an awl, three rings, fragment of a bracelet and two barbed and tanged metal points.

Toll : a riveted dagger (group III).

Mas Vila (Ferrer y Giro, 1943, p.192): a riveted dagger (group III), fragment of a ring, v-perforated buttons, coarse, flint arrowheads, knives, etc.

Batl-Vell (Ferrer Soler, 1953-4) : a riveted dagger, probably group III.

Cova del Foric, Tartareu, Lerida (Colominas Roca, 1925) : an awl.

Montjuich, Gerona (Pericot, 1952, p.74ff) : two awls and a band of sheet bronze.

Cova dels Encantats, Serinya, Gerona (Colominas, 1925) : three metal points, v-perforated buttons, a gold ring, and also flint leaf-shaped arrowheads, saws, scrapers, bone points and spatulae. Pericot believes that the metal points are later in date than the other finds (1952, p.94-5).

Cau de l'Olivar d'en Margell, Toroella de Montgri (Pericot, 1950, p.93) : a copper fragment which may be part of a bracelet, a flint knife /

knife and arrowheads.

S. Bartomeu de Olius (Pericot, 1950, p.97) : a copper axe.

Aigues Vives, Brics (Pericot, 1950, p.98-100) : three awls, a metal point, a riveted dagger of group II, a silver wire ring, twenty-six v-perforated buttons, lozenge-ornamented and cord-decorated beaker (see p.298), etc.

There remain a few sites which do not come under the classification of dolmens or caves. They are as follows :-

Campo de la Creueta, Gerona : a dwelling site, it yielded a copper ingot.

Villars, Gerona : a metal "awl" was found embedded in a skull (Taracena, 1933, p.66).

Villassar de Mar, Barcelona : a small trapeze-shaped axe is reputed to have been found in an "urn", which also contained carbonised bone (A.I.E.C., 1908, p.554, Fig.2).

Palau Salabardera : an axe similar to the previous one.

Riner : a landslide revealed the following stray finds (Serra i Vilaro, 1942) : two moulds for axes, one of which also contains a mould for a chisel, and a mould for awls or chisels. Pottery finds from the same site consisted of a sieve, with a crude foot-ring, a handled beaker, and three large storage jars.

Gerona : a halberd was found under a house in the town (Riuro, 1943, p.280).

b. Discussion

Relatively few daggers have been found in Cataluna. Four tanged daggers, two of which are probably reflux types, and four riveted /

riveted daggers are known. Four of these daggers (two of each type) were associated with v-perforated buttons. Five daggers were found in caves, the remainder were found in dolmens.

There is only one halberd known from this region, it is not like the Argaric halberds, and is in fact more like the Portuguese type.

Axes, too, are uncommon and there were none which resembled the Argaric types. They were mostly simple trapeze-shaped axes which are not easily datable. A hoard of twenty-one axes found at Egea de los Caballeros near Zaragoza may belong to this period (Bardaviu, 1922 and Bosch Gimpera, 1923, p.46, Fig.11d).

Awls were one of the more common metal types. They were found mostly in the dolmens and some may belong to an earlier period. Two awls of particular interest were found in the dolmens at Tossal del Jovell and Coll de Creus II (Pericot, 1950, p.85). They belong to the reflux type with middle thickening, two similar awls were found at El Argar.

Several metal points were found in Cataluna, the barbed and tanged ones may be related to the same type in Valencia, the relationship of the Palmela ones is less certain and may be due to beaker activity.

The commonest metal types were rings and bracelets, which were found in more than twenty dolmens and at a few cave sites. Bracelets are actually known in eight dolmens and most of them appear to have open ends unlike the Argar examples where the ends usually overlapped.

The find at two sites of silver objects is particularly interesting /

interesting and suggests the possibility of contact with El Argar.

The only fragment of gold was found associated with v-perforated buttons which suggests that as at El Argar the gold occurs in a reflux context.

The significance of the beaker ware in this area has already been discussed in the previous chapter. It is, however, interesting to note that, if the associations at El Pany are valid, beaker ware was found in the same level with rings and bracelets, and thus the arrival of this type in the Peninsula may also have to be regarded as the result of the reflux movement (see p. 324). Furthermore, beakers have been found associated with metal in four dolmens and two caves.

Button-handled pottery, which Sangmeister considers to have arrived in Spain as a result of the reflux movement, was studied by Maluquer some years ago. He found that this pottery type was more characteristic of the western group of graves (Maluquer, 1942) than of the eastern, where beaker ware was commoner.

V-perforated buttons were common in the region and have already been considered in connection with the reflux movement. It should be further noted, however, that these buttons are associated with metal objects in five graves and five dolmens, and on four occasions they were found with tanged or riveted daggers.

The many finds of copper ingots, crucibles and moulds suggests that there was an active local metal industry. The technique used was, as is suggested by the finds from Riner, casting in an open mould. There is, at Riner, a copper mine within the town boundary and it is probable that the beginning of its exploitation dates to this period.

A study of the distribution of dolmens containing metal shows that there are two main concentrations. These are in the region of Solsona (Pericot graves 106, 107, 115, 118, 124, 125, 133, 134, 137, 138, 140) and Seo de Urgel (Pericot graves 144, 154, 162, 163, 164, 165, 166, 177, 179, 180, 181, 185, 197), and there is one grave between them (Pericot grave 141). Both these groups, especially the Solsona group, are near Riner. The other dolmens with metal are mainly coastal and there is a small group around Vich (Pericot graves 87, 88, 89, 90, 93, 94); these are the two groups with the greatest number of beaker and v-perforated button finds.

The significance of the Villasar de Mar burial is uncertain. It seems to be a pithos burial but contained burnt bones, a feature which was not noted at El Argar.

Mention must be made of several axes with slight flanges found in Cataluna, at Oix (Bosch Gimpera, 1925), Pla d'Arols (Massot, 1923), with two axes at each site, Camp de Tarragona (Bosch Gimpera, 1925), and from a hoard in the cave of Muriachs (Lerisa) comes an axe with slight flanges and a distinct waisted effect. (This was found together with eleven massive bracelets, all of them with open ends, and in some cases there is incised decoration near the ends (cf. Los Millares 33) which suggests that they may be quite late.

To summarise then, it seems as if beaker influences, and particularly the beaker reflux movement, were strong in the region. Very little contact with the Valencian and Argaric bronze age cultures can be shown, and there is no evidence to suggest the arrival of new cultures in the area. The caves and the dolmens of the previous /

previous period continue in use. There are signs that there was a local metallurgical industry but, judging from the few metal finds of this date from the area, it seems as if it was not of great importance or originality.

H. SOUTH-WEST SPAIN AND SOUTH PORTUGAL

a. The sites and finds

One of the most interesting sites is the necropolis of rock-cut tombs at Alcaide near Antequera (Gimenez Reyna, 1946). Unfortunately the grave finds are not yet published, but they are known to include two riveted daggers and a point with a long tang similar to those found at Cueva de la Pastora (Sevilla). The date of the construction of these tombs is not known, but apparently the finds suggest that the tombs must have been in use in pre-argaric times (information kindly supplied by Sangmeister and Leisner).

The other sites from this region are listed below, together with the more important finds :-

Montilla, Cordoba : a cist grave which was discovered during the course of agricultural operations (Cabre Aguillo, 1915-20, p.546). Four Palmela points (class I) were found with a gold diadem, two gold bands and a long tanged dagger. The diadem is little more than a band of gold, slightly wider in the middle than at the edges, it measures 0.44 m. in length. The ends are perforated.

Cueva de la Pastora, Sevilla (Leisner, 1943, p.195) : in 1860, near the entrance to the grave, an urn was found which contained thirty metal points with short oval-shaped blades and long circular and square-sectioned tangs (Fig.15, 4).

Purenque-Larraez, Aciscar, Cadiz : a passage grave near the Laguna de la Janda. (Leisner, 1943, p.219). A tiny riveted dagger of group II was found. The associated finds were a few flint flakes and a nucleus and pot sherds.

Several cist graves are reported from the region of Almonaster (Huelva) (Recaredo de Garay y Andruga, 1923, p.35). The graves, rectangular or trapezoidal in shape, are usually orientated east to west and lined by four stone slabs. They are usually found in groups of four or five and the author reports that usually only one grave in each group contains metal. Metal finds from the graves consist of a small gold ring, a riveted copper blade, a dagger of probably group III, a copper ring and four spiral silver bracelets. Two pottery vessels illustrated are clearly of El Argar type 5.

In the Algarve, a survey of bronze age sites is greatly facilitated by the work of Estacio da Veiga (IV, 1891, p.65-191). He was able to list thirty-five different cist grave cemeteries, which were found mainly around the modern towns of Aljezur, Mexilhoeira Grande, Lagoa, Alte, Faro, and Castro Marim. Fifteen of these cemeteries are known to have yielded copper objects but many of these have been lost or sold to tinkers and the graves, too, have suffered destruction. Only the more important cist grave cemetery sites are listed below; the other sites are reported to have contained daggers, points, awls, chisels, or a bronze plaque, but no further details are available. It should be noted that, unless two or more graves are referred to, the finds quoted come from only one grave in the particular cemetery.

Curral da Pedra /

Curral da Pedra (Estacio da Veiga, 1891, p.129, Pl.XV, 6-7).

One grave contained a slightly biconical pot (with a wide mouth), and a dagger blade, which apparently was not riveted.

Another grave contained a similar type of pot.

Serro dos Valles (Estacio da Veiga, 1891, p.126, Pl.XII, 6) : a pot which is not described, and small corroded dagger of type II.

Monte de Cima, Vila Real de S. Antonio : a riveted dagger of type II, pottery sherds and bones.

Serro de Alcaria do Pocinho (Estacio da Veiga, 1891, p.112, Pl.XIII, 5-7) : a tiny dagger of type II and a pot of Siret type 5 which contained a skull.

Another grave contained a type II dagger.

Serro da Eira da Estrada, Castro Marim : one grave contained a riveted dagger of group III, sherds, a flint nucleus and a ball of diorite (Estacio da Veiga IV, p.125). Two other graves contained a biconical pot with a wide mouth and a pot with large rounded belly and short neck, and a small handle.

Monte do Castello, Estoi : an Ecija halberd type.

Fonte Santa (Estacio da Veiga IV, p.85) : stone axes and a copper chisel which were sold to Baron Maltzan who seems to have given them to the University Museum of Freiburg (Bresgau).

Zambujal (Estacio da Veiga, 1891, p.122-3) : a Praganca point.

Corte do Guadiana (Estacio da Veiga, 1891, Pl.XV, 2) : a sort of globular pot which may belong to Siret type 5.

Serro dos Corveiros (Estacio da Veiga, 1891, Pl.XV, 5) : a squat pot resembling Siret type 5.

Canada de Bias /

Canada de Bias : a squat pot of Siret type 5.

Donalda (Estacio da Veiga, 1891) : pottery which is reputed to be like that from Torre dos Frades, and the description certainly suggests pottery of Siret type 5.

Relva Cha (Estacio da Veiga, 1891, p.130) : a stone axe.

Mau Dinheiro (Estacio da Veiga, 1891, p.114 and 120) : three callais beads.

Other investigators in the same area have noted further cist grave sites of the same date. These are indicated below :

Campina, Faro (Santos Rocha, 1904) : an Ecijar halberd and a dagger of type I.

Baralha, Portimao (Santos Rocha, 1904) : a cist grave necropolis.

Grave 1 : a headless skeleton, lying on its right side and orientated north to south. Near its left hand was an awl, three pots of Siret type 5, and a copper dagger of type III.

Grave 2 : a headless skeleton lying on its left side, a dagger lay near its right hand. The heel of the dagger had been hammered over from both sides, but remains of three v-shaped notches are clearly visible. The dagger probably belongs to type III. The pottery found in the grave is probably of Siret type 5.

Val do Carro, between Albufeira and Quarteira (Veiga Ferreira and Albuquerque Castro, 1948) : a group of eight cist graves.

Grave 1 : two skeletons, a bronze needle and "Argaric" pottery.

Grave 2 : two skeletons, three bronze bracelets with the terminals bent back, and "Argaric" pottery.

Almadeninha, Budens (Viana, Formosinho Veiga Ferreira, 1953, p.107, Fig.8 /

Fig.8). The following finds were discovered near the remains of three now destroyed cist graves : a copper dagger of type III, an axe fragment which has been used as a chisel and fragments of a bronze bracelet.

Alcaria, Caldas de Monchique (Formosinho, Veiga Ferreira and Viana, 1953-54) : a dagger blade which showed no signs of having been riveted.

Odemira (Estacio da Veiga, 1891, Pl.XI, 5) : a Palmela point and a small trapeze-shaped axe with a narrow butt.

Vila Nova de Milfontes (Estacio da Veiga, 1891, Pl.XI, 6) : a Palmela point.

The more important stray finds from this area consist of a halberd found at Ecija, Sevilla, which has given its name to a special halberd type (Fig.13, 1). It is very similar to one found in pithos grave 575 at El Argar. A dagger of type I, with a nick in the heel, was found at Italica, near Sevilla.

b. Discussion

Perhaps the most interesting feature of the bronze age in this part of the Peninsula is the fact that cist grave burial is so common, and that the cists tend to occur in small cemeteries containing a small number of graves. The origin of the use of cists for burial purposes in this region is not clear, because in previous periods the custom had been that of collective burial in passage or gallery graves. Cist grave burial may be due to the beaker culture, if it can be proved that the early beaker groups in the Peninsula practised this type of burial, or it may have to be regarded as due to either reflux or Argaric influence.

The finds of Argaric objects in the rock-cut tombs at Alcaide shows that the tombs were in use during the Argaric bronze age. If, however, they can be shown to contain finds of an earlier date they cannot be regarded as having been constructed by the bronze age inhabitants of the region and, in fact, their plans and details of construction such as the trapeze-shaped entrance invite comparison with the rock-cut tombs of Cerro del Greal (see p.59 and Corral Mavrell, 1957, Pellicer, 1957-8).

The metal types found in this area are also interesting. Daggers of group II suggest contemporaneity with the cist grave phase at El Argar, but the find of two daggers of group I show that the contact continued in the Argar pithos phase.

Three halberds of the Ecija type have been found in this area. At El Argar they were thought to date to the pithos phase and the find from Campina, where this halberd type was found in the same grave as a type I dagger, confirms this belief. No other halberd types are found in the region with the exception of a couple from the province of Cordoba.

Axes were rarely found in the graves, but a large number of stray finds of trapeze-shaped and Alentejo axes are known, especially from the Mexilhoeira area.

A few Palmela points were found in the region and their associations are particularly interesting. At Montilla, they were found with a long tanged dagger and gold objects, and at Odemira one was found in a cist grave together with a small trapeze-shaped axe, the narrow butt of which may indicate connection with El Argar.

There /

There were few finds of bracelets or rings and they were not similar to the Argaric ones. Veiga Ferreira and Albuquerque Castro compare the bracelets from Val do Carro with central European "ösenhalsring" but this is unlikely, and the bending back of the terminals in the Carro examples is probably quite fortuitous.

The find of silver objects in Huelva also indicates contact with El Argar, and when the importance of silver in the second phase at El Argar is considered, it seems likely that this find represents contact with the later Argar phase.

A certain similarity of shape could be detected between some of the pottery found in the graves and pottery of Siret style 5, but in no case does the pottery from south Spain and Portugal achieve the fine line and burnished finish of the Argaric pottery.

The handled pot from Eira da Estrada has no immediate parallels, but it vaguely resembles the handled beaker forms which were so common in Valencia.

The reason for the large number of graves from this region may be related to the fact that there are rich mineral deposits in the area. Estacio da Veiga and Recaredo de Garay, in fact, firmly believed that these graves were the graves of miners who were exploiting these copper deposits. This might help to explain the general poverty of these graves and the lack of personal ornaments. In conclusion, it can be said that the evidence suggests slight contact between the south of Spain and Portugal and El Argar during both cist grave and the pithos grave phases.

I. THE ALENTEJO

a. The Sites and finds

Dolmens which were very common in the previous periods contain surprisingly few finds of metal objects. Cist graves now appear in this region, and there are occasional finds from copper mines and even one or two hoards are known. The more important sites are listed below in the following sequence: dolmens, cist graves, mines and hoards.

Almost the only metal type found in dolmens is the Praganca point (Fig.15, 1). This is a leaf-shaped blade with no distinction between the blade and the tang. It is known from the following dolmens: Assobiador (O.A.P. I p.120 and 214); Barrocal 2. (Viana and Dias de Dios, 1955, p.15); dolmens DM, AM and KO (Etnological Museum, Lisbon - excavated by Heleno); and Lousal (Veiga Ferreira, 1954, p.190-202).

The dolmen 2 at Carrao near Elvas, contained five skulls. A metal blade which has a nick in the heel was found below one of the skulls.

Cist graves were particularly common in the freguesias of Ervidel, Santa Vitoria and Mombeja (Viana and Nunes Ribeiro, 1957, p.50). Unfortunately, very little information is available regarding the finds from these graves.

Ulmo is a small cemetery of twelve graves, six of which are orientated north to south or north-east to south-west (Viana and Nunes Ribeiro, 1957, p.51-3). The finds were as follows :-

Grave 1 : a metal knife.

Grave 8 /

Grave 8 : an awl.

Grave 9 : a type VI dagger and an atypical bag-shaped pot, and bones.

Herdade de Montinho, a cist grave (Viana, 1946). It contained a dagger with a notch on either side of the heel which probably belongs to type III. The associated pottery, from the illustrations, appears to represent Siret types 2 and 5, but there is another pot of completely different character. It has a big rounded body, a constricted neck and an everted rim; the body of the pot is decorated by broad, shallow vertical grooves which radiate from near the base like the petals of a flower.

Courela das Mos, Santa Vitoria, an unpublished cist grave, the finds from which are now in the possession of Nunes Ribeiro in Beja. The finds consisted of three pots. One pot is similar to the one found at Montinho. It also has a globular body, a constricted neck, an everted rim, and a similar style of decoration, consisting of thirteen panels or facets arranged in petal-like formation. The two other pots are very exaggerated examples of Siret type 5. The larger pot has a design of a six-pointed star with a small triangle of decoration between, burnished into the interior base. The centre of the design was a small omphalos-like depression. The smaller vessel also had a design on the interior base, but the burnishing was faint; the motif seemed to consist of a several pointed star decorated by hatching.

Ervidel, a cist grave (Viana, 1946). It contained a pot which is an exaggerated example of Siret type 5. The internal base is decorated by a burnished design which is centred on an omphalos-like depression /

depression in the middle. The motif consists of an eight-pointed star which is hatched. The background is also hatched but in the opposite direction, and is so arranged as to leave an unornamented four-pointed star formation around the central design.

Three cist graves were discovered at Santa Vitoria, but there seems to be some confusion regarding the provenance of the finds and of a decorated grave slab.

The finds consisted of two undecorated pots which are exaggerated forms of Siret type 5, another of similar type but with a design burnished on to the interior base, a globular vessel of the type found in Montinho and Courela das Mos, and a "faim corto" of metal (Leite de Vasconcellas, 1906, and Viana, 1946). The design on the burnished pot is a St. Andrew's cross superimposed on a St. George's cross. There is no omphalos. A grave slab found in this same grave group is decorated by an axe, a sword, a bow and other unidentifiable motifs carved in low relief (Breuil, 1935, No.5).

Viana attributes both the decorated slab and the burnish-decorated pot to the same grave (Viana, 1946). The pot seems, however, to be the same one as that illustrated by Leite de Vasconcellas in 1906 which was found in his grave B with the "faim corto" and the pot similar to the one found at Montinho. He makes no reference to a decorated slab from the same grave. The slab which Viana attributes to the grave with the burnished pot is remarkably similar to one illustrated by Leite de Vasconcellas (1906) but attributed by him to grave C, which contained one of the undecorated pots.

Leite de Vasconcellas published several decorated grave slabs in 1906. Two were discovered in Trigaxes (now Trigaches), Beringal, Beja; one covered a cist grave containing human bones and a fragment of bronze plaque; the design on the slab shows among other things a sword. From grave 3 in this group comes a decorated slab with an axe design.

Three slabs were found in the courtyard of a peasant's house in Alcarias, Mombeja; one seems to have a sort of double axe motif and the other something which may be a sword hilt.

In 1908 Leite de Vasconcellas published a further slab from Defesa, Santiago de Cacem, which had been utilised for a grave in the historical period. This showed an axe and a sword (Breuil, 1935, No.4).

At Mesas, Panoias de Ourique, Leite de Vasconcellos found a slab with an axe head design on it, built into the wall of a well (Breuil, 1935, No.6). In the same area several cist graves were discovered, one of which contained a Siret type 5 pot, while several slabs covering the graves were perforated and one had cupmarks on it.

In 1933, Heleno published a slab, now in Santiago de Cacem Museum, which showed an axe, a sword and something which resembled a hafted halberd or a standard of some sort, with three rectangular-shaped objects hanging from the "blade".

More recently, Viana and Nunes Ribeiro reported the discovery of two decorated slabs (Viana and Nunes Ribeiro, 1956, photo 86 and 90 one (No.86) was found at Pedreirinha (Santa Vitoria) and represents an axe and a sword; the other (No.90) was found at Assento (Santa Vitoria) /

Vitoria) shows an axe, a sword, and hafted axes.

Finds are known from two copper mines :

Juliana mine which yielded two Alentejo axes, two metal chisels and several stone hammers (Estacio da Veiga, 1891, p.211); and Aljustrel mine which contained riveted daggers, axes, and arrowheads (all now lost) and a Praganca point (Estacio da Veiga, 1891, p.144).

Recognizable hoard finds are rare in the Peninsula but there are two from the Alentejo.

At Cano, Sousal, ten rough metal daggers of type III were found together. Their general shoddiness and lack of finish suggests that they were factory rejects, perhaps intended for re-melting.

A small hoard of bronzes was found when diverting the course of the river Alviella, a tributary of the Tagus east of Santarem. It contained a bracelet with open ends, a chisel (or an awl), a small "tíge", the cutting edge of a Tagus type axe, the point of a sword and seven unidentifiable fragments (Cartailhac, 1886, p.220-2, Fig. 303-4). The dating of this hoard must depend on the type of sword present, which is unfortunately not illustrated.

Stray finds from this region consist of a gold diadem and an ear-ring decorated by pricked ornament found at Estremoz (Heleno, 1943) and another diadem from Don Benito, Badajoz. Stray axe finds are common in the region and particularly of a type which is called the Alentejo axe (map XX and XXI). This is a large axe type with a broad butt; the sides curve out gently to form a widely splayed cutting edge. Stray Praganca points are known from Castro de Geraldo, Cavaleiro Castro and Alcacovas.

b. Discussion

The finds from the Alentejo show a marked concentration of graves and finds in the Beja region of Baixo Alentejo. Cist graves, in fact, are not found in Alto Alentejo. The significance of the decorated grave slabs must be discussed in a later section.

The metal types are not very instructive, the daggers are vaguely Argaric in form, but the axes and points are quite distinctive. The points are related to a type found commonly at the settlement site of Praganca in the Tagus area and are in fact found mainly in Alto Alentejo (map XXII).

The pottery is also very individualistic though in some cases the basic form is probably inspired by Argaric types. The decoration of the interior base by burnishing may be similar to a pot found at Ifre in grave 5 (see p. 376). The globular pot of the type found at Montinho has no immediate parallels. It must be noted that this group of pottery is closely associated with the decorated grave slabs and the distribution is limited to a small area of Baixo Alentejo.

The mineral resources of the Alentejo were certainly exploited during this period as the finds from the mines of Juliana and Aljustrel suggest.

There is very little internal dating evidence for the bronze age in this region. There is no doubt that it is contemporary with El Argar but there are so few Argaric types found in the area that it is not possible to say with which phase at El Argar it can be equated. Further evidence for dating will be obtained from a consideration of the /

the foreign parallels in a later section of this chapter.

J. THE TAGUS AREA AND BETRA

a. The sites and finds

This area, which was particularly important during previous periods, has yielded very few finds which can be attributed to the bronze age. The following are the main sites at which finds of this date are known :-

Praganca. This is a settlement site (see p. 161). Among the metal finds there are two simple, riveted bronze knives which would be classified as group III at Argar, and a very fine dagger with five small rivets, which would be group V at Argar. There are other metal blades, sometimes with a rudimentary tang which has two or more nicks in it (presumably to facilitate hafting), but these cannot be regarded as riveted daggers. Another dagger type, which is frequent at this site, may have a long or a short blade but is characterised by a distinct midrib and a short riveted tang.

Other finds include elongated points with little distinction between the tang and the blade. These have been called Praganca points (Fig.15, 1). A few barbed and tanged metal points have also been found and serve to emphasise the contemporaneity of Praganca and Argar.

Grooved ware is found fairly frequently at Praganca and also a type of pottery with similar and more complex incised designs. The ware is hard and well-fired. It has been referred to as incised ware.

At S. Mamede, which is also a settlement site (see p. 160), a small dagger was found which has seven notches around the heel. It is difficult to consider these as rivet holes, but the small size of the dagger is reminiscent of the group II daggers in the Algarve (e.g. Monte de Cima).

At Vila Nova de S. Pedro no riveted daggers have been found and the only metal finds which can with certainty be attributed to this phase are an Alentejo type axe which was apparently found with a square-sectioned chisel, a pyramidal v-perforated button, at least two awls with middle thickening (Paco and Sangmeister, 1956, Pl.17, 13 and 14) and, lastly, two flat barbed points with very short tangs (op. cit. Pl.17, 9 and 10). With regard to pottery, numerous sherds of grooved ware and incised ware of the type common at Praganca have been found.

From the tholos of Barro, near Torres Vedras, come two bronze rings. They are complete circles, unlike most examples from Argar and may thus be late bronze age in date.

In the cave of Redondas (Vieira Natividade, 1901) a very fine riveted dagger was found. It has three rivets set in triangular formation, the remains of the hilt are still visible and show a semi-circular opening at the base. The dagger blade below the haft measures about nine inches in length and has two grooves parallel to the sides of the blade on both faces. This dagger was associated with several Praganca points, two wrist guards, two flat Tagus axes, seven pots, two flint blades, one bone button, and stone axes and beads.

At /

At Espite near Vila Nova de Ourem, a hoard of over fifteen Tagus axes was found (Estacio da Veiga, 1891, p.152-3). Also from Espite comes a dagger with a notch on either side of the heel which appears to have been found with the hoard.

A group III dagger with two broken rivet holes is known from Cesaredo (Obidos), and at Val da Cornaga (Obidos) a dagger with two notches on either side of the heel was found.

The most interesting stray find is that of a tanged sword at Pinhal dos Melos, near Fornos de Algedres in Beira (do Paco and Ferreira, 1957). The blade is twenty and a half inches long and has a two inch long tang. There are grooves along the edge of the blade on both faces.

b. Discussion

Perhaps the most interesting feature of the bronze age in this area is the complete lack of finds comparable to the cist grave cemeteries of the Alentejo and the south of the Peninsula and the general sparsity of finds which can be dated to the "Argaric" period at all. This picture is one of complete contrast to the one seen during the beaker period and the early period of colonisation, when there was a concentration of finds in the area around the Tagus mouth.

Although there are few daggers, some interesting facts emerge from a study of them. The dagger from Redondas is unique in the region and almost unique in the Peninsula on account of its grooves. The only other grooved riveted dagger known is from grave 1 at Fuente Alamo where it was associated with a halberd and a gold bracelet (see p. 369), but in the Fuente Alamo dagger the grooves have been polished /

polished into the blade and are not cast, as they probably are in the Redondas example. The group V dagger from Praganca suggests that the site is contemporary with phase A at El Argar. The presence of two reflux type tanged daggers in this region has been referred to in the previous chapter and it is particularly interesting to note that the only sword known from the region is tanged and not riveted. This fact, together with the obvious scarcity of riveted daggers in the area, suggests that tanged daggers were the predominant type in western Portugal.

Daggers of the type found at Praganca with the riveted tang and mid-rib are known from Fornea, Torres Vedras; Columbeira, Obidos (two examples); Cabeça do Jardo, Torres Vedras; and Porto de Moz, Turquel (Cartailhac, 1886, p.220 - this is a hoard). A similar dagger type, with a midrib and tang but no rivets, which presumably is of the same tradition, is known from Pedra de Ouro, Alenquer; Vila Nova de S. Pedro, Cartaxo; Loriga, Beira Litoral (Santos Rocha, 1909); Caldellas, Leiria (a hoard find); Monte do Castro, Esposende Minho; Sanguinheiro, S. Lourenço; Castro de Nogueira, Boticas; and Castro S. Lourenço, Chaves, the last three are all in Tras-os-Montes (Russel Cortez, 1949).

With the exception of the axe from Vila Nova de S. Pedro, there are no associated finds with axes, and even stray finds of bronze age axe types are rare in the area (map XX).

The find of awls with middle thickening at Vila Nova de S. Pedro is important because this awl type can be related to the reflux movement (see p. 449).

Finds of Palmela points are common in the area and particularly in the southern part of the Tagus peninsula. They are frequently found in beaker contexts but in other areas of the Peninsula they are often found with long tanged daggers or gold objects (see p. 455). The Praganca point, on the other hand, is not found in beaker contexts and, in fact, is commonest in the Alcobaco area which, though it borders the important beaker (and with it Palmela point) concentration around the mouth of the Tagus, has itself yielded only rare sherds of beaker. The Praganca points are less well made than the Palmela points. This is particularly noticeable in the tang which in the Palmela type is square-sectioned but in the Praganca type is of quite flat hammered metal. It is possible that the Praganca point was at first an imitation of the Palmela points but continued in use into bronze age times.

Barbed and tanged points are also found, though not very commonly, in the region.

Grooved pottery was found at several sites in the area and evidence has already been put forward to show that some of it was made from clay found only at Cabo da Roca near Sintra. There is no evidence to indicate whether it was actually made there or if only the clay was obtained there. With regard to its dating, there is little evidence, but the fact that it was found at Praganca and S. Mamede, which were both sites with very little evidence of beaker occupation, suggests that the pottery must be dated to the bronze age. Grooved pottery was also known from sites such as Rotura and Chibannes /

Chibannes where beaker ware was very common, but there is no stratigraphical evidence available at these sites to show whether both pottery types are contemporary.

From this rapid survey, it will be obvious that, as in Cataluna, evidence of the reflux movement is still strong. To the reflux can be added the evidence of the v-perforated buttons which have been found at ten sites around the Tagus mouth and bracers, which have been found at twelve sites (see Sangmeister forthcoming a).

Little evidence for contact with either of the Argar phases can be seen in this region.

There is also little evidence to suggest that there was an important metallurgical industry in the region as there had been in earlier periods but this may be due to the fact that there were inadequate mineral resources.

K. NORTH AND WEST SPAIN AND PORTUGAL

a. The sites and finds

With the exception of the museums in northern Portugal, the writer is unfamiliar with the museums and their contents in this region. Hence, any study must be based on the material available in the literature. A perusal of Lopez Cuevillos' article entitled "Os Oestrijmrios, Saefes e Oliolotria en Galiza" (1929) or the plates in MacWhite's "Estudios sobre las relaciones Atlanticas de la Peninsula Hispanica en la Edad del Bronce" (1951) suffice to show the quantity of interesting material awaiting further study, but unfortunately descriptions /

descriptions very frequently lack illustrations, and illustrations, information, so that many distribution maps included here show gaps in Galicia which give a false impression of poverty in that area.

In earlier times this region seems to have been relatively unimportant but several sites of bronze age date are known. They are given below with the more important finds from them.

Vilavella (Puentes de Garcia Rodriguez) in Galicia is well known because of the maritime beakers found there (one of which is probably a reflux type). These were apparently found in a dolmen (Castillo, 1947, p.634). In the same group of graves where these beakers were found was another grave of cist type which, according to Castillo, contained a dagger, five Palmela points and a gold diadem, and Monteagudo accepts this inventory (1953); Lopez Guevillas however, refers to four graves at Vilavella, the contents of which were as follows :-

Grave 1 : a copper point.

Grave 2 : "anacos de punta de frecha de cobre".

Grave 3 : a tanged copper dagger, three Palmela points and a gold diadem.

Grave 4 : a copper axe.

The dagger is a reflux dagger type (for illustration see Lopez Guevillas and Bouza Brey, 1931). The gold diadem is a simple gold band with a slit at one end and a perforation at both ends which are rounded (Monteagudo, 1953, Fig.6).

Sao Bento de Balugaes, Barcelos (Estacio da Veiga, 1891, p.156, Pl.IV): an earth grave which contained three Palmela points (class II and /

and a gold diadem or belt. This is like an elaborate belt or neck band, 0.35 m. long, 0.022 m. wide, the ends of which have been hammered out to form half-moon shaped terminals 0.036 m. wide. With the exception of the terminals, which are quite plain, the rest of the band has been split horizontally five times to give a series of six strands.

Quinta da Agua Branca, Vila Nova de Cerveira, Minho: a cist grave, orientated west-north-west to east-south-east. It contained a single burial which was accompanied by a gold diadem and a tanged sword, about fifteen and a half inches long, with a one and a quarter inch long tang.

There is no information regarding the position of the diadem which is a long rectangular band of gold, 0.602 m. long and 0.41-0.47 m. wide. There is a series of six perforations at one end. The decoration which is pricked consists of a single line and within it a zigzag line outlining the shape of the diadem, within this again are two long lines of pricked ornament joined at each end (Fortes, 1905-8, p.241).

At La Obispa, a (modern?) cemetery in Burgos, a long tanged dagger was found. The blade measures 0.305 cm. in length and the tang 0.04.5 cm.

Castro de S. Lourenco, Tras-os-Montes (Russel Cortez, 1949: a settlement site where a Tagus axe and a Palmela point have been found.

Cabeceiras de Basto: a settlement(?) site at which a Palmela point has been found. A gold lunula and two gold discs also appear to /

to have been found here (Cardozo, 1929-30 and MacWhite 1951, p.50).

Penha, near Guimaraes, Minho: a settlement site situated on the top of a very high hill and commands a magnificent view of all the surrounding countryside. The site has not been excavated but, during the course of building operations and road construction on the top of the hill, various prehistoric objects have been found. They are as follows :- an Alentejo axe, a palstave and a socketed spearhead, which, according to MacWhite, was found in a pot of a type commonly found at this site and called Penha pottery (MacWhite, 1951, p. 16). The pottery is decorated by grooves but it is not the same as the grooved ware found in the Tagus area, the paste is less hard and more friable, and the grooved decoration is all over and not confined to the upper part of the vessel. The motifs are, however, similar and the shapes of the pots are more varied (MacWhite, 1951, Pl.XXXI).

Bornes, Tras-os-Montes: an unpublished hoard find of four halberds. These halberds are fairly big and have a roughly triangular-shaped heel which has three not very large rivet holes. There is a broad midrib and a series of grooves along the edge of the blade. This type will be called the Portuguese type and it is quite distinct from the Argar halberd types.

Abreiro, Tras-os-Montes: a probable hoard find which contains two Portuguese type halberds.

Barcelos: a hoard of three axes. The axes resemble the Alentejo type but are further characterised by a deep semi-circular cutting edge. MacWhite named this type the Barcelos axe, and this nomenclature is followed here.

Bujoes /

Bujoes, Vila Real, Tras-os-Montes: a hoard of seven Alentejo axes (Botelho, 1899-1903, p.166).

In Llusa cave, Ogarrio, Santander, three riveted swords were found, and they may have formed a hoard. Two of these swords have broad heels and several rivets like the Argaric swords. They also resemble the Argaric swords in that the blade is waisted below the heel, but they are broader in proportion than the Argaric swords. One sword measures seventeen inches in length and the other, nineteen and a half, but they are both three and three-quarter inches broad at the heel. The third sword from Llusa is the most interesting one. It resembles the other two in shape and has six rivets placed in two groups of three in the heel, but there is a tiny projection on the heel and a series of five grooves running parallel with the sides. (The writer is indebted to Prof. Evans for access to his private drawings of these swords; a poor illustration of them will be found in Maluquer, 1947, p.786, Fig.610).

Acobillas, Ronfeiro, Sarreus, Orense: is an interesting hoard which contained two halberds, six riveted and one tanged dagger, one arrowhead and two flat axes (Lopez Cuevillas and Bouza Brey, 1929, and Lopez Cuevillas, 1925, p.32, MacWhite, 1950, Pl.IV). The tanged dagger is similar to the sword from Agua Branca. The two halberds appear to be very simple types with a thickening down the centre of the blade instead of a midrib. The heel is almost straight. The riveted daggers, with one exception, which seem to be more related to the Argaric sword type, all belong to group III. The arrowhead has a very long, narrow blade and a short tang and does not fall readily into /

into any group. The one axe illustrated by MacWhite is a trapeze-shaped axe. The find must represent a metal worker's hoard which explains the occurrence of all these types together.

There are several finds from the region which are either stray finds or insufficiently documented ones. They are as follows :-

Cicere, Santa Comba, Coruna: the find, which may be a hoard, consisted of a gold diadem or band similar to the one from S. Bento de Balugaes, a simple gold diadem which is wider in the middle than at the ends, one of the ends is decorated by pricked ornament, two fragments of other gold diadems and three fragments of gold bracelets (Monteagudo, 1953, p.292-3, Fig.32).

At Monte dos Mouros, Melide, Coruna, two gold collars or diadems were found which appear to be imitations of the S. Bento de Balugaes type. They lack the half-moon shaped terminals and the decoration on the band does not consist of individual strands, though the plain band does have a series of horizontal grooves which give the impression of strands (Monteagudo, 1953, Fig.12).

Golada, Lalin, Pontevedra: at this site another gold collar was found. It is broader than the Monte dos Mouros example but employs the same device for imitating the strands of the S. Bento example. Two bracelets were found with this collar, they are solid gold and the terminals have been beaten to give a slight buffer effect (Monteagudo, 1953, Fig.11, MacWhite, 1951, Pl.XI).

In the mine of Milagro at Cangas de Onis, an Alentejo axe was found together with a diorite hammer, a pick, a mace, antler picks and human skulls (Serra y Rafols, 1924, p.147).

Folgadoura /

Folgadoura tin mine at Viana do Castello in Minho also contained an Alentejo axe (Zbyszewski and Veiga Ferreira, 1955).

At Braga, a sword was found which resembles the Argaric type but it has no rivet holes. Evans refers to the finding of four more swords at various places in Galicia, and one sword is also said to have grooves (Evans, 1952).

b. Discussion

It will be appreciated that the finds referred to above from north and west Spain and Portugal differ considerably from finds of the same date in other areas of the Peninsula. It is impossible to appreciate the significance of these differences without a detailed study of the foreign parallels and relationships which will be made in a later section. Meantime, it should suffice to summarise the main points.

The daggers are mainly in the form of swords which resemble the Argar type in shape but which are often characterised by curious features such as grooves or small projections on the heel.

The halberds, as has been noted, are quite distinct from the Argaric halberds. The Portuguese type has no associated finds. Only the halberds from Ronfheiro are associated with other metal types, but these halberds do not belong to the Portuguese type.

The Alentejo axe was popular in the area as map XX indicates but a distinct local type called the Barcelos axe appears. The gap in map XX over Galicia is probably due to the fact that the writer was not able to visit the museums there. Reference to the literature shows that axes are common in the area but the descriptions are too inadequate /

inadequate to allow any classification of the axes to be made.

Gold is amazingly common in the north-west of the Peninsula, and is found in exotic forms. The frequent association of gold with cist burial, tanged daggers and Palmela points is interesting. None of the gold objects can be compared with finds from El Argar, nor are there any finds of silver known from this period in the north-west area.

With the exception of Penha, very little information is available regarding the pottery. At Penha there is no certain dating evidence for the pottery. If MacWhite is correct and the socketed spearhead was found inside a vessel of this type of pottery, it indicates that it must have been in use at a fairly late date in the bronze age. It has been suggested that the Penha pottery was derived from the grooved ware of the Tagus area.

In conclusion, it can be said that in the north-west of the Peninsula there was a vigorous local metallurgical industry which received its supply of copper and tin from local mines. The amount of gold found suggests that the industry was very rich.

L. THE MESETA

With the exception of the beaker period, few sites and finds of earlier date are known from the Meseta. In the bronze age, too, there are very few interesting finds. The main sites are given below :-

Grajal de Campos, Leon (Luengo, 1941): a grave, in which two Palmela /

Palmela points and a wrist guard with four perforations have been found.

At Lancia, Leon (Luengo, 1941), a riveted dagger appears to have been found with a palstave and barbed metal point.

El Otero, Valdevimbre, Leon (Luengo, 1941, p.128): two Alentejo axes, two riveted daggers of groups I and III, a saw, a small anvil, a socketed, leaf-shaped spearhead and a socketed chisel. Luengo suggests that this may be a grave but the mixed nature of the finds suggests that it is a hoard.

At La Perla near Madrid, a riveted sword was found. It measures twenty-one inches in length and is three and three-quarter inches broad at the heel. (The writer is again indebted to Prof. Evans for access to his private notes on this sword.)

Near Ciudad Real on the southernmost fringes of the Meseta, there seems to have been an important Argaric site. Several finds from this site are in the Ashmolean Museum in Oxford but there are no details available concerning the nature of the site. The finds consist of a type V dagger, which is twelve inches long, and a splayed halberd. From the same area comes a type VI dagger and a sword (the latter is in the Archaeological Museum in Madrid).

The finds from the Meseta are so few that it is impossible to discuss their significance and this will be done in the course of the next section when relationships with other areas become clear.

M. DISCUSSION

This survey has served to show that, during the bronze age in the Peninsula, there were many local cultures related to each other to a greater or less degree but that there was not a single Argaric culture. The term Argaric bronze age can only be used in the broadest sense to indicate contemporaneity with Argar and not any direct relationship. At El Argar it was possible to distinguish two main phases, namely the cist grave phase and the pithos phase, and contact with these two phases can be seen in very varying degrees in different parts of the Peninsula. It is now necessary to consider more fully the relationships of the different metal types in the two phases and their origin, in or beyond the Peninsula. This will be done in the following sequence: metal types, gold and silver objects, pottery and, lastly, bone and stone objects. At the end of the discussion there will be a short note on the grave types and mining activities.

a. Metal types

A new type appearing in the Peninsula at this time is the riveted dagger. At El Argar it was possible to distinguish six different types of dagger and it could be shown that there was a chronological distinction between some of the types. Most of the daggers were basically long flat blades with small rivet holes, frequently set in a straight line across the heel. Some daggers were rather more triangular in shape but, with a few exceptions, none of them showed any distinctive characteristics. Riveted daggers of the earlier groups - V, II, III and VI - were found in most other areas /

areas of the Peninsula but never in such profusion as they were at Argar.

One dagger from Argar, which belonged to the early group V, was of particular interest because it had a small projection on the heel. This was the dagger from grave 449 (Fig.12, 7) and it was found with a simple halberd. Sangmeister believes that daggers with projections on the heel can be associated with the reflux movement (see p. 313) and the type is familiar in the Reinecke A 1 cultures and is known, for example, from Singen (graves 3 and 9) and Muenchen Valley Platz (this dagger was found with a ring and dot ornamented bone ring). The Oder-Elbe "Vollgriffdolche" also have this feature (for example, the dagger from Gaubickleheim (Uenze, 1938, Pl.35 and also Pls. 36a and 37)) and it is also represented in daggers from Brittany and Wessex, which are recognised as being of central European origin. There is a possibility that another one or two daggers from El Argar also have small projections. It is permissible to conclude that this dagger type arrived at El Argar as a result of the reflux movement and that it originated in central Europe.

The Reinecke A 1 cultures of south Germany are characterised by the use of riveted daggers in contrast to the tanged daggers of the beaker cultures, and if the special dagger type represented in grave 449 at El Argar arrived at this time as a result of the reflux movement it is quite possible that the whole idea of making riveted daggers arrived in Spain as a result of the reflux movement. This would explain the appearance of a type II riveted dagger in the cave of Aigues Vives together with other reflux features such as cord-ornamented /

ornamented beaker and v-perforated buttons. It would also explain why more triangular-shaped daggers appear in the cist graves at Argar, because the Reinecke A 1 daggers are triangular. Portugal, especially the Tagus area, was also strongly influenced by the reflux movement, but there riveted daggers are rare. It must be remembered, however, that reflux tanged daggers were found there and, as certain of the reflux features found in Portugal differ from the types found in Spain (e.g. v-perforated buttons, prismatic or pyramidal in east Spain, but tortuga shaped in Portugal), this suggests that there were several reflux movements which brought different reflux features to different areas of the Peninsula. The movement which brought the riveted daggers seems to have spread down the east coast and did not reach Portugal, while the reflux tanged daggers reached north and west Spain and Portugal. It has been suggested that the Argaric daggers may be derived from the Terremara dagger series of Italy. There are, however, differences between the two groups. The main difference is that the Terremara daggers have a midrib and the Argaric daggers are quite flat. Other differences can be seen in the proportions, in the type of hilt and in the fact that the Terremara daggers do not have small projections on the heel.

Any similarity between the two dagger series may be due to the fact that they may both have been derived from central Europe as a result of the reflux movement.

It could be shown at El Argar that swords belong to the pithos phase. Elsewhere in the Peninsula swords are rarely associated with other datable objects. Their origin has often been sought in the east /

east Mediterranean but, more recently, Evans has suggested that they must be derived from the Breton daggers and that they enter the Peninsula through the provinces of Galicia and Asturias (Evans, 1957). This is suggested by one of the swords from Ogarrio which had a tiny projection on the heel and was decorated by grooving, both of which are features found on the Breton swords (for example, Carnoët¹¹), which themselves developed from the reflux riveted dagger type mentioned earlier as being found in Brittany. The route to the south followed by the swords seems to be marked by sites such as Santa Olalla de Bureba, La Perla, Ciudad Real, Atarfe and Montejicar. It must be added that there is no evidence to show that this route was used in connection with other metal types.

The hafting of swords like the one from Fuente Alamo 9 or El Argar 429 can, as Sandars pointed out, be paralleled in the Aegean (e.g. Knossos Hospital Hood, 1952, p.269¹).

The use of grooves on swords is restricted to two or three examples from riveted swords in the north of the Peninsula. It is not found in the south. In the north and west where tanged swords are found, two of these are also decorated by grooves. Grooves are usually cast, but in the case of the dagger from Fuente Alamo, they were polished into the surface. With the exception of the halberds, there is little evidence for the use of casting in a closed mould in Argaric times. The Reinecke A 1 daggers in south Germany often have grooves and this feature is also found in the Breton daggers and swords. Thus it is possible to regard the appearance of grooves on Iberian daggers as further indication of the contact with Brittany.

The /

The distribution of grooved daggers in the north and west of the Peninsula tends to confirm this suggestion. It is also interesting to note that grooved and riveted Breton swords, such as the ones from Carnoët, also have long tangs or projections on the heel and the size of these, in proportion to the size of the blade, is remarkably similar to the proportions of the tang to the blade in the Portuguese tanged swords (Tresors, 1886, Pl.3, 4 and 6).

The sword from Fuente Tojar is the only sword to be found in the area between south-east Spain and Portugal and it differs from Argaric swords by having a midrib and straight sides instead of the flat blade and waisted effect below the heel. This sword, in fact, resembles a big halberd rather than an Argaric sword.

The appearance of swords in the decoration of the Alentejo grave slabs must also be dealt with here. The identification of the type of sword illustrated on these slabs is complicated by the fact that they are represented with their hilts and pommels and these have perished in the swords found at Argar and elsewhere. A sword in the Rodrigues' Collection in Madrid which was probably found in Asturias has a completely preserved hilt (Maluquer, 1947, p.784-5 and p.792). The hilt, which is a magnificent specimen, is of gold and the details of the form are very like the Alentejo carvings. The pommel is in the form of a mushroom-shaped disc and there is another disc encircling the hilt. This sword is said to be Argaric in type. Thus the engravings on the Alentejo grave slabs probably represent swords of Argaric date, of a type which is known in the north-west of the Peninsula.

The type I dagger at El Argar was typical of the pithos burial and was rarely found outside south-east Spain. Sandars has pointed out that this dagger type, with the rivets set in a square formation, is known in Palestine in the early second millenium (private correspondence with Piggott). This is, in fact, type 18 of Maxwell Hyslop's series from early and middle bronze age sites in Palestine (e.g. Tell Ajjul, Bethlehem, Megiddo and Kerazeh). It must be added that a long sword with a similar setting of rivets was found in the tumulus of Castello Saint-Brandon in Brittany (de Pontois, 1929) though this may owe more to the Rixheim sword type than to eastern influence.

The last group of daggers to be considered is the group noticed at Praganca in Portugal and characterised by having a midrib and a tang which is sometimes riveted. Somewhat similar daggers have been found in late bronze age hoards such as Rio de Huelva and Huerto de Arriba (Almagro, 1940, and 1943, p.270) and, in view of the fact that other middle and late bronze age types are known from Praganca (e.g. sickles, palstaves, socketed spearheads, etc.), it is suggested that this dagger type must also be considered late.

Halberds have long been a vexed problem not only in Peninsula prehistory, but in European prehistory. Sometimes a Spanish origin for halberds has been suggested, but the fact that halberds have midribs means that they must have been cast in a closed mould and this was a technique which seems to have died out in the Peninsula with the colonists at the beginning of the bronze age. It was unknown in beaker times. Therefore, it would be logical to conclude that /

that the halberd is most likely to have originated in an area where casting in a closed mould was an established technique. Both Evans and Sangmeister have independently suggested that the halberd must have developed on the border between battle-axe-using and dagger-using cultures. While Evans favours central Europe for such a meeting ground, Sangmeister prefers to see the vital contact taking place in Ireland. As Piggott has pointed out, however, the Irish bronzesmiths did not show very much originality in the early bronze age and also the technique used in producing halberds (closed-mould casting) differs from that used for making flat axes (open-mould casting). Piggott is of the opinion that the Aunjetitz bronze group not only had the originality, but also had the necessary technical skill at its disposal. Furthermore, battle-axes are very uncommon in Ireland and must be regarded as deriving from the east English ones. The matter is further complicated by the fact that halberds in Britain and central Europe often have very large rivets, a feature which is otherwise only found on the riveted daggers of England. Altogether, the evidence does suggest that halberds originated in central Europe rather than in Spain or Ireland.

In the Peninsula, two very distinct groups of halberds were noted. These were the Portuguese halberds, found in north-west Portugal and the splayed halberds, found in south-east Spain. The Ecijar halberd is a completely different type and must be considered later.

The splayed halberds, which were found mainly at Argaric sites, must, on account of their exaggerated form, be considered late in the development /

development of halberds. There are, at El Argar, however, some simple halberd forms. One of these, which was found in grave 449 with the reflux riveted dagger, has a simple triangular blade with very lightly concave sides, the butt is carefully curved, there are four rivets and there is also a midrib. This halberd can be paralleled in Germany at sites such as Giebichtenstein, Halle, Saxony (O'Riordain, 1937, No.18, Fig.63 and Otto and Witter, 1952, Pl.11, No.555; the analysis of this example shows that it is made from copper F 2 which Junghans regards as late Reinecke A 1 and mainly A 2 in date). If the association of this dagger at El Argar with a reflux dagger type can be regarded as significant and not fortuitous, and if the German parallels are valid, this halberd type could be regarded as yet another result of the reflux movement. In Germany, halberds had certainly developed by the end of beaker times because there is a reference to a halberd found in a beaker context at Feuersbrunn in Austria (Beninger, 1934, p.130). Thus from this point of view, too, the evidence is consistent.

The Portuguese halberd type has no immediate parallels with central Europe. They are best paralleled in O'Riordain's group 4 in Ireland (S. O'Riordain, 1937, p.195ff). His number 62, for example, is very similar and appears to have grooves. The main difference is that the Irish example has very large rivet holes, though No.105, one from a hoard found at Hillswood, Co. Galway, may have grooves and rivets which are smaller and more like the Portuguese ones. The halberd from Portalloch, Argyll (O'Riordain, 1937, Scotland No.5) is again of this type (but has no grooves?). A halberd /

halberd from Wroxeter (Shropshire, O'Riordain, 1957, England No.9) is of similar type but has no grooves and there are five rivet holes, the latter a feature never found in the Portuguese halberds.

Thus it appears likely that the Portuguese halberds are related to the British series. It is uncertain if this contact was maintained via Brittany where only two halberds are known (St. Fiacre and Tuerlesquin) or was a direct contact.

The fact that the Portuguese halberds are characterised by grooves is particularly interesting in view of the evidence of the daggers and swords. It was thought that the grooving on the swords may have been derived from Brittany but, as Portuguese halberds, which show little contact with Brittany, also have grooves it must be borne in mind that the idea could have been transferred from the halberds to the swords. This is not without significance with regard to the dating, because the swords must be dated approximately to the pithos phase at Argar. Even if a time lag is allowed for them to arrive at El Argar, it would still make them later than the reflux halberd horizon. If the Portuguese halberds are regarded as contemporary with these swords it would mean that the Portuguese halberds are later than the Argar reflux types. There is no evidence for the position of the Portuguese halberds with regard to the later splayed types.

There is no doubt regarding the date of the Ecijar halberd type. At El Argar it was found in a pithos and at Campina it was found with a type I dagger. It can, therefore, date only to the pithos phase at Argar. Its distribution in south Spain shows a wide contact /

contact with the Argar culture. The origin of the type is very uncertain, but if it is to be sought in the Peschiera dagger, as Evans has suggested, it would make it very late indeed (according to the dating suggested in a recent study by Peroni of these daggers).

Several bronze age axe types were noticed in the Peninsula. These were the Argar, the Alentejo, and the trapeze-shaped axe. They will be discussed in turn below.

The axes found at Argaric sites were characterised especially by a very narrow butt. In one example the butt actually came to a point. Argaric axes show no relation to the reflux movement, and this is to be expected as axes are not characteristic of either bell beaker or Reinecke A 1 cultures. Axes first become common in Reinecke A 2 but Spanish axes bear no relation to the south German A 2 axe types which are flanged. Thus the axe at Argar must be regarded either as a survival of the colonial axe (Almizaraque) or as an import from the East or the West. Argar axes show little resemblance to the big heavy Portuguese axes and they are found predominantly in pithos burials and it must be assumed that they are connected with the eastern influences represented by the pithos burial (see p. 465) though this is not easy to demonstrate.

The only known parallel for the narrow butt of the Argaric axe is in a series of axes known from Hungary, Slavonia, Croatia and part of Dalmatia. They are usually found in big hoards consisting only of axes, or of axes and a special form of shaft-hole axe. Moulds of this axe type are known from Toszeg B 2 levels and later. It is difficult to imagine any connection between these two areas at this /

this time, but the resemblance may be due to an ultimate common origin; though where this might be is quite unknown!

The Alentejo axe type differs from the Argar axe in having a broad butt, almost parallel sides, and a splayed cutting edge. It is usually bigger and heavier than the Argaric axes. A glance at the distribution map showing this axe type (map XX) shows the remarkable concentration in the Algarve, the Alentejo and Minho, with very few in middle Portugal. The blank over Galicia is due to insufficient information regarding the axe types from there and, if the concentration in the Minho can be taken as indicative, as it assuredly ought to, because in other respects the two regions hang very closely together, then one can expect a fairly heavy distribution for this area. This map contrasts sharply with the map of Tagus axes, the centre of distribution of which was precisely in the Tagus area. The vast majority of these axes are stray finds and no information can be obtained from that source, but certainly the distribution conforms very well with the pattern of cultural activity in the bronze age already noticed in the survey. If this map is compared with the map of Argaric axes (No. XVIII), it will be appreciated that the Argaric axe types I, II and III have an almost wholly south-east Spanish distribution.

The distributions of the Argaric axe and the Alentejo axe are to some extent complementary and, taken together, show the three main centres of axe distribution in the Peninsula, namely, the Minho, the Alentejo-Algarve and Argar districts. The map of trapeze-shaped axes (XXI) is rather less informative, probably because the axe type is /

is so simple that it could belong to any period from earliest times until well into the late bronze age. It does, however, serve to emphasise the importance of the Algarve, Alentejo and Minho districts.

The Alentejo axe resembles the Irish and British axes and, in fact, the Alentejo axe, found in the upper levels at Vila Nova de S. Pedro, together with a rivet and a chisel (do Paco and Costa Arthur 1952, Fig.11, p.31-2), is actually made of Irish copper (group E 11 Sangmeister, 1958, p.46) as is another from S. Joao de Rei (Minho) (op. cit. p.46).

The evidence of the axes thus tends to confirm the impressions already gained through the study of the halberds, namely, that there were direct connections with the British Isles (probably Ireland). It also emphasises the importance of the Algarve/Alentejo and the north-west regions in the bronze age.

Besides showing the distribution of Alentejo axes, map XX also shows the distribution of the Barcelos type. This group was originally defined by MacWhite (MacWhite, 1951, p.47). Only those axes which have not been seen by the writer have been excluded from the map. The distribution, narrowly confined as it is to northern Mino and Orense, suggests the presence of a distinctive local metallurgical industry. MacWhite suggests that the prototype for these axes is to be seen in the Aunjetitz axe (MacWhite, 1951, p.47). Presumably he means the axes of Reinecke A 2, which frequently have deep semi-circular cutting edges. It must, however, be pointed out that this axe type is usually slightly flanged and frequently has a nick in the butt. It is differently proportioned from the Barcelos axes /

axes, tending to be long and slim, the Barcelos axes being broad and short (very like many of the normal Alentejo axe type in the west of the Peninsula). Nor is this A 2 axe type very common in Brittany (Briard and Giot, 1936) so that the Barcelos axe may represent a purely local development from the Alentejo axe type.

Flanged axes are quite uncommon in the Argar culture, and they are, in fact, only found occasionally in Cataluna. In central Europe, they are first found in the Reinecke A 2 cultures, and thus their appearance in Cataluna may be due to continued contact with central Europe at a time when Cataluna no longer had connections with south-east Spain.

Reference must also be made to the battle-axe motif noticed on the Alentejo grave slabs. This was the commonest motif and was found on seven out of a total of ten slabs. The battle-axe represented by these carvings has a crescent-shaped blade, a long shaft and a small crescent-shaped terminal to the haft. Battle-axes of this type, or in fact of any type, are not known in the Peninsula.

Leite de Vasconcellos recognised the north European affinities of these axes (Leite de Vasconcellos, 1897-1908, vol.111, p.4) and the find of an axe of northern type in Brittany helps to make this northern contact more probable. The Breton battle-axe is a magnificent example made completely in bronze; the cutting edge is crescent-shaped and the butt end has a mushroom-like mounting very similar in detail to the axe motifs on these Alentejo grave slabs. The Breton example was found at Kersoufflet (Morbihan) (Tresors, 1886, Pl.XVII) and similar axe types are known in corded ware contexts /

contexts in central Europe, as for example Luzice, Moravia and Niederhone, Hesse Lieli, Switzerland (Childe, 1929, p.146-7 and Holste, 1939, p.21). Other examples are also known from Bresnow, Stargard, where one was found with a halberd and a flanged axe (Sturms, 1936, Pl.4), Klein Poplow, Malzkov, Stolp and one was also dredged from the Oder near Stettin (Kersten, 1958, Fig.5, 539; Fig.92, 818; Fig.100, 893; Fig.102, 915). This axe type in Europe seems to be dated to early-middle bronze age times.

Awls with middle thickening were found at several sites in the Peninsula, most of which were in the eastern part of the country (see p.540). Sangmeister, as has already been mentioned, regards them as components of the reflux movement. In central Europe, they have been found in Reinecke A 1 contexts, at sites such as Straubing, Kronwinkel, Singen and Honsolgen. They have also been found in the south of England (Piggott, forthcoming in four of Hoare's barrows) at Odoorn in Holland where they were associated with a tanged dagger, and at sites such as Liquisse dolmen, Grotte de Ruisseau and Couriac cist in the south of France. They probably entered the Peninsula in the north-east because two of these awls are known from Catalan dolmens (Pericot, 1950, p.85) and, in fact, their distribution is similar to that of v-perforated buttons.

Palmela points have already been mentioned in the chapter dealing with the beaker material in the Peninsula. Reference must be made to them again because they appear in bronze age contexts at sites such as Montilla and S. Bento de Balugaes, which must be post-beaker /

beaker in date. Although there is no doubt that they begin in beaker times, as they are frequently found with beaker material, there is less evidence concerning their continued use and survival in bronze age times. An interesting find was that of a Palmela point in a late bronze hoard at Padillo de Abajo (MacWhite, 1951, Pl.XXII and p.89), but the significance of this is uncertain owing to the circumstances of the find. It does seem clear, however, that Palmela points continued in use until bronze age times.

A comparison between the distribution of Palmela points and of Praganca points shows that the Palmela points are most common in south of the Tagus area and the Praganca points are found chiefly on the fringes of this area, both to the north and the south of it. Praganca points differ considerably from Palmela points in that they are completely flat and hammered and there is little distinction between the blade and the tang, whereas Palmela points have square sectioned tangs and a definite distinction between the blade and the tang. Praganca points are found commonly in caves or in the Alentejo, in dolmens. They are never found with beakers. At Zambujeira in the Algarve, a Praganca point was found in a cist grave. They may have originated on the fringe of the area where Palmela points are common in imitation of Palmela points. The fact that they are found commonly in dolmens in the Alentejo and in Granada suggests that they belong to a more indigenous group than do the Palmela points.

Sangmeister has compared the points which were found at Cueva de la Pastora in the south of Spain with points which have been found /

found at Buckland, Kent and Plymstock, Devon (Sangmeister, 1958, p.48-49). One of the points from La Pastora is made of F 1 copper which is of east Alpine origin and was exploited from late Reinecke A 1 and A 2 times.

Barbed and tanged points are found in all areas of the Peninsula. They are also a common type in the east Mediterranean, particularly in Hittite areas. At Gozlu Kule, near Tarsus, barbed and tanged points were found in the late bronze age II levels and, at the same site, simple rounded points are known from the early bronze age levels (Goldman, 1956).

At Vila Nova de S. Pedro, two very flat hammered arrowheads with barbs and a short tang were found (do Paco and Sangmeister, 1956, Pl.17, 9-10). Similar arrowheads have been found at Cabezo Redondo, Villena, Alicante (Soler Garcia, 1949. The writer is grateful to Prof. Evans for access to his private notes on the Villena points). Outside the Peninsula there is a close parallel for this type of arrowhead in the tumulus of St. Fiacre in Brittany where two thin metal points were found (O'Riordain, 1938, p.230 and Aveneau de la Granciere, 1898, p.134). Associated finds in this tumulus were halberds, daggers and a silver bowl.

Altogether, the evidence of date and cultural associations of the points is very unsatisfactory, mainly because the vast majority are stray finds (even those from El Argar are unassociated finds).

The use of bracelets and spiral armbands and wire rings at Argar is certainly something new in the Iberian bronze-working tradition. Their distribution is mainly east coastal and they are rarely /

rarely found in the west of the Peninsula. These types were, however, a common feature of the bronze age of central Europe, particularly of the Reinecke A 1 phase which has already been suggested as the origin of other features in Argar. Their most likely route into Spain is indicated by the presence of similar objects in the Catalan dolmens. Certain minor differences should be pointed out: the wire rings in the Straubing culture are usually made of double wire, whereas those of El Argar are usually a single wire; spiral bracelets are not as frequent in Argaric contexts as they are in Reinecke A 1 groups, where two types of bracelets may be recognised: those using copper bands with a circular section and those using copper bands with a flattened oval section, while at Argar, as far as can be gathered from Siret's drawings, the bracelets seem to be of circular section. These are, however, differences of a minor nature and do not influence the hypothesis that the bracelets and rings in the Argar culture originated in central Europe. In Argar very few bracelets are found which form a complete circle. Mostly they are made from bars of metal which have been bent over to form a rough circle, the two ends usually overlap slightly, a feature which is also found in the Reinecke A 1 cultures.

Mention must also be made of small spiral wire beads which were found in the pithos graves at El Argar. They are not found in other bronze age sites in the Peninsula. Similar spiral beads are common in the Reinecke A 1 cultures in the south of Germany, for example at Straubing. (In Germany they are called spiral röhrrchen.)

Whether /

Whether it is legitimate to regard them as yet another reflux feature, in view of the fact that they are rarely found in cist graves at El Argar, is doubtful and their origin must in the meantime remain uncertain.

Siret refers to copper beads in the graves at El Argar. Cast copper beads are especially characteristic of the late neolithic cultures of south Germany and Switzerland. An examination of Siret's drawings shows, however, that the so-called beads are in fact nothing more than tiny copper wire rings. The Leisners may be referring to similar objects when they write of 'Kupferperlen' in the dolmens of south-east Spain (Leisner, 1943) but it would be necessary to know the material better before any further discussion can be made. Pericot, too, refers to "cuentas de cobre" but these seem, in some instances at least, to be tiny strips of copper foil rolled to form cylindrical beads (Pericot, 1930, p.89). Again, these cannot be compared to the central European cast copper beads.

A brief reference must be made to socketed spearheads which have been mentioned from time to time in the survey. Socketed spearheads are a feature which first appear in Europe with Reinecke A 2 cultures (e.g. Langquaid), but other A 2 features such as perforated globe-headed pins, flanged axes, etc., never appear in Spain. It is, therefore, unlikely that Spanish spearheads are to be related to this phase. At Penha in north Portugal, a special type of socketed spearhead was found associated with Penha pottery. This type of spearhead broadens out from a small base, narrows very suddenly and tapers to a point, and is known from other sites in Spain /

Spain, e.g. Merida, Padillo de Abajo, Huerta de Arriba, etc. Spearheads of this type are known from various parts of Europe. Sturms, when referring to one from Lunau-Suchostrzygi, calls it a Hungarian type, with finds from eastern Germany and Poland as far as Mecklenburg. He dates it to period III (Sturms, 1936, p.51). Childe illustrates one from a late Mycenaean grave at Metaxata, Kephallenia (Childe, 1950, p.226, Fig.180). Thus if the association is correct, a date late in the bronze age can be assumed for Penha pottery. Its roots, however, may go back to the grooved ware of the Tagus estuary

b. Gold and Silver

The evidence from various parts of the Peninsula indicates that, in the early bronze age, gold is to be associated mainly with the beaker culture or with the cist grave phase at Argar. There are thirty-one sites where gold has been found, six of which are unassociated finds. Of the remaining twenty-five finds, there are eight associations with beaker (Ermegeira, Palmela, S. Pedro de Estoril, Penha Verde, Cova da Moura, La Canada G, Carrascal and Belmonte), nine with Palmela points (Vilavella, Palmela, Cova da Moura, Alcala, Belmonte, Aldeia Vieja, Montilla, S. Bento de Balugaes, Cabeceiras Basto), seven with tanged daggers (Vilavella, S. Pedro de Estoril, Carrascal, Agua Branca, Belmonte, Aldeia Vieja, and Montilla), while only the finds from Fuente Alama, El Oficio, Callosa de Segura, Algorfa and Cabezo Redondo are associated with riveted daggers. There are eight finds from cist graves, three from rock-cut tombs, six from dolmens, and three from caves and three from /

from settlements. Gold, Palmela points, tanged daggers and bell beakers are found seven times together, while gold, Palmela points and/or tanged daggers are found twelve times together - that is nearly 50% of the total number of associated finds. Of the eight closed finds (that is in cists) gold is found three times each with Palmela points and tanged daggers. One must conclude that the beaker people and perhaps especially the reflux beaker people had a considerable interest in the use and distribution of gold. The evidence from Argar showed that the use of gold was commoner in the cist grave phase than in the pithos period.

Diadems or collars are one of the commonest types of object made from gold. The simplest form of diadem is that found at Vilavella, which consisted of a single gold band which had slits at each end, probably to be used for tying the ends together.

Another simple form of diadem is that found in the cist grave at Montilla, along with Palmela points and a long tanged dagger. This diadem is wide in the middle and narrows gradually towards each end. Similar diadems have been found at Don Benito, Badajoz (an unassociated find); Estremoz (associated with an ear-ring); S. Mamede (stray find in a settlement); Cueva de los Murcielagos (see p.38); and Cicere (associated with an elaborate collar and fragments of other diadems and bracelets). The finds of this diadem type are so widespread and associated with such a variety of finds that no definite conclusions can be reached concerning them, beyond the fact that, on the basis of the Montilla evidence, they must be dated to late beaker and early Argaric times.

The simple diadem from Cicere had pricked decoration at one end. Pricked ornament is very rare in the Peninsula. It is known on collars from Quinta da Agua Branca and El Oficio, and on a diadem from Cehegin, and finally on ear-rings from Cova da Moura and Ermegeira. Though virtually unknown in the Peninsula, this technique is used in the Reinecke A 1 cultures of south Germany. The tiny "Blech Tutuli", such as those from grave 20 at Straubing (Hundt, 1958, Pl.8, 18) or those from Göggingen (Hubner, 1957, Fig.6, 3-17) and the long beads from rolls of hammered sheet copper, frequently have a line of pricked ornament along the join (e.g. Hundt, 1958, Pl.16, 8, Pl.13, 35, 12, 4). Occasionally, the Scheibenkopfnadeln (disc-headed pins) bear such ornament (e.g. Hundt, 1958, Pl.14 or 6, or in Hachmann, 1957, p. ^a), but in^a/grave at Alburger Hochsweg at Straubing, fragments of a copper band were found which was decorated by a horizontal row of pricked dots along its edge and another fragment may indicate that there was more decoration within the confines of the band (Hundt, 1958, Pl.15, No.30 and 31). Hundt states (1958, p.29) that, judging from the patina on the skull, the copper band had been the decoration on some form of headdress - and one might suggest that it may even have been a diadem of the type known from El Oficio. Similar copper bands with pricked decoration are known from other early bronze age contexts (e.g. Tinsdahl (A 2), Krüssow (A 2), Stecklin (A 2) (Hachmann, Pls.31, 19-20, Pl.36, No.1, 37, 11-12) and Sande (Schwantes, 1936, p.79ff)). It is thus permissible to think of this technique ultimately /

ultimately as a result of the beaker reflux movement. With regard to the collar from El Oficio, this means that it is not in any way related to the elegant Argaric diadems, but that it may have close relationship with the reflux movement. The gold diadem from Cehegin, the disc of which is decorated by a pricked ornament (Maluquer, 1947, Fig.594), must be regarded as an imitation of the Argaric silver diadems by a local population which was descended from the cist grave tradition of Argar.

The ear-rings from Ermegeira, Estremoz and Cova da Moura (Heleno, 1943) all consist of a roughly circular-shaped fragment of sheet gold, with a long thin tang which has been bent over to form a hook, the edge of the ear-rings is decorated by a double row of pricked ornament. There is an exact parallel to this ear-ring type at Dacommet (Deehommed?), Co. Down, Ireland (Armstrong, 1933, p.38, Pl.XVIII, 413).

In this context of bronze age connections between Ireland and Iberia as shown by the gold work, one must point out MacWhite's view that a gold disc found in the Province of Oviedo is an actual import from Ireland (MacWhite, 1951, p.50). The gold lunula which was found with two gold discs at Cabeceiras de Basto (Cardozo, 1929-30, and MacWhite, 1951, p.50) have been compared by MacWhite to the lunulae from Skovshøjrup and Fredensborg in Denmark (Hardey, 1937, p.465), while Cardozo compares the discs to others found in Bensafrim and Condeixa-a-Velha in Portugal (Cardozo, 1929).

The diadem or collar found at S. Bento de Balugaes is more complex than any of the others considered above, because the ends have /

have been beaten into half-moon-shaped terminals and the main part of the band has been cut horizontally into strands. This unusual neckband has an exact parallel in a find from Cicere, Santa Comba, Coruna.

Two collars or diadems from Monte dos Mouros, Mellid (Monteagudo, 1953, Fig.12) must come within this group too, because, although they lack the half-moon-shaped terminals, and the individual strands of the previous examples, they do have a series of incised horizontal grooves, which obviously imitate the individual strands. A collar from Golada, which is much wider and more elaborate than the previous examples, nevertheless uses the same device for giving the impression of strands (Monteagudo, 1953, Fig.11, MacWhite, 1951, Pl.IX). This type of ornament, whereby the gold is slit to form strands, has a good parallel in a gold collar found inside a pot in the passage of the "alle couverte" at Roc'h Guyon, Plouharnel, Morbihan in Brittany (Tresors, 1886, Pl.10, 1 and 2). This collar is considerably wider than the two Iberian examples, it has twelve strands and the terminals are not beaten out as in the Iberian ones, but are folded over to form a crude clasp. Monteagudo notes a further parallel for this type in the collar from Saint-Laurs, Niort (Monteagudo, 1953, p.302) and Wailles (private conversation) adds that the terminals are decorated in simple motifs by pricked ornament.

The silver diadems found at El Argar are distinctive because of their form. The band encircling the head is very fine, especially when compared with the wide diadems known in the rest of the /

the Peninsula. The presence, too, of the disc supported by a stem are also unique features of the Argar diadems. MacWhite suggests that these may in fact be sun discs mounted on a diadem (MacWhite, 1951, p.54). There is, however, an interesting object from Thermi which compares very favourably with the Argar diadems. It is a lead band, 17.5 cm. long, decorated by incised zigzag motif, and projecting from the middle of the band is a flat oval disc, supported by a wide stalk, this is decorated by a criss-cross pattern (Lamb, 1936). It was found in a mixed deposit containing 10% middle and late bronze age material. Miss Lamb admits that it has no parallels. Although this object is by no means an exact parallel to the Argar diadems, the resemblance in shape is certainly very striking.

The use of silver is restricted predominantly to the east and particularly to the south-east of the Peninsula (map XXIII). The silver takes the form mainly of rings and bracelets, though there are also a few diadems and a curious stepped disc which was found in one of the pithos graves at El Argar. Evans suggests that it is paralleled in a bronze object from Montepelato in Italy (Evans, 1958, p.65). This is rather dubious, however, as the Argar object has obviously been hammered out to shape from a sheet of silver. The Montepelato object is a solid casting with a tiny loop on the base and, superficially at least, resembles more the spiral tutuli of Reinecke A 1 and later cultures, though again there is a distinct difference in technique as the Reinecke A 1 objects are made from bronze wire. Certainly there appear to be no satisfactory parallels for the Argar object.

Outside the Peninsula, silver is not very common but it is interesting to note that a silver bowl was found at St. Fiacre and that spiral silver rings were found at Carnoët in Brittany (Tresors, 1886, Pl.6, No.6). The immediate source of the silver used in Brittany is not known, but in view of the obvious contacts between there and the west of the Peninsula, there is a possibility that it may have come from Argar. Against this hypothesis, however, is the fact that silver is rare in the west and, with the exception of the swords, there is little suggestion of direct contact between Brittany and Argar.

c. Pottery

Beaker decoration and motifs appear to continue in use in the Peninsula long after the typical beaker forms have been lost. This is suggested by the pottery decorated by hyphenated ornament at Praganca in Portugal and also by sites such as cueva del P. Saturio or cueva de S. Garcia which Santa Olalla first published as beaker sites (Martinez Santa Olalla, 1926) and even the upper levels which at first were thought to date to beaker times have been shown to be bronze age in date (Castillo, 1947).

The pottery with burnished decoration on the interior base, which was found in the Alentejo, is particularly interesting. The nearest parallel for it is in a pot found in a cist grave at Ifre, the interior base of which was said, by Siret, to be decorated by 'le lisage' (Siret, 1887, Pl.18, 5). The designs on the bases are also similar in the two areas. The origin of this type of decoration is not known.

A large storage jar, found at Penha de Guimaraes, has an ovoid shape, a flat base, a slight shoulder, and four handles below the rim (MacWhite, 1951, Pl.XXXII). It is reminiscent of the biconical pots which are found in the second series of the Breton tumuli (Cogne and Giot, 1951). Another large storage jar from Riner also resembles these Breton pots. It has a narrow base, a high carinated shoulder and a short neck with four handles.

A pottery cup, found at Islote de la Torre in Alicante, is very interesting because it has, along the top of the handle, four small lugs, which is very reminiscent of the riveted handles on metal, and particularly gold cups such as the one found at Rillalton in Cornwall and Fritzdorf near Bonn, in Germany (v. Uslar, Germania XXXIII, Pl.29-32).

A typical pottery form at El Argar was the chalice. This is a form of long standing tradition in the east Mediterranean. A curved wooden rod was found in grave 9 at Fuente Alamo and it has been suggested that this could be fitted to the chalice from the same grave to form a high standing handle (Sandars in private correspondence with Prof. Piggott). If this is so it gives the chalice an even more eastern appearance.

d. Bone and Stone

The most interesting objects of bone are the v-perforated buttons which have been discussed in an earlier chapter in connection with the reflux movement. The association of buttons of this type with bronze age sites must, however, be noticed because it suggests that the sites have, in many cases, originated as a result of the reflux movement.

The use of ring and dot ornament on bone objects is known from El Argar and from Cataluna. The origin and relationship of this motif have been dealt with in an earlier chapter and it is sufficient to note here that it too indicates the reflux movement.

Grave No.9 at Fuente Alamo contained thirty-nine segmented faience beads. As Stone has shown (1956, p.37-84), segmented beads were the commonest type of faience bead and they are to be found in Roumania, Slovakia, Hungary, Moravia, Austria, Poland, Denmark, France, Holland, Britain and also in Malta and Lipari. The dates obtained from a study of the different association suggested to Stone that "the main movement of faience objects to the west must very likely have been after 1450 and probably after 1400" because these beads are associated with Late Helladic III pottery in Lipari.

In the Aeolian Islands, the beads are found in a Thapsos-Milazzese culture context, which is characterised by pithos burial. In Malta, they are found at the time of the Tarxien cemetery, which is characterised by cremation burial. A faience bead was found in Brittany in a dagger grave, at Run-ar-justicov (Kestrobél-en-Crozon, Finistère) (Daniel, 1958, p.7). This grave belongs to Giot's "second series" (Cogne and Giot, 1951). Characteristic of these graves are large biconical pots, often with four handles below the rim. Faience was also found in Wessex culture graves, where of the ninety-nine graves listed by Piggott (1938, p.102-6), twenty-one have faience beads and, in sixteen cases, the faience beads are associated with cremation burials (in at least seven cases the cremation is contained in an urn).

It is very curious that all these cultures, which can be proved contemporary because of finds of faience beads, are characterised by burials which are contained in, or accompanied by, large pots. It is probable that there is a common religious (?) idea behind them all. With regard to the fact that cremations and not inhumations in urns are found in the Wessex culture, this may be due to the fact that only in areas with a high standard of potting can vessels be produced large enough to hold a body, and also no doubt sun for drying was an important factor, thus in order to overcome this difficulty the Wessex people appear to have resorted to cremation, a rite familiar since neolithic times in Britain.

Bone segmented beads are known from nineteen pithos graves at El Argar. They are not found in other parts of the Peninsula, but they are known from other parts of Europe, for example in Brittany and in the British Isles (Daniel, 1958, and Piggott, 1958). They are generally regarded as imitations of faience beads and hence must be broadly contemporary with them. Thus they are of importance from the chronological point of view and any graves containing them, for example, the pithos graves of El Argar must date to about 1400 B.C.

The winged bone or stone beads, found by Cabre at Monachil, can be paralleled in finds from Vivier's cave in the south of France (Bosch Gimpera, 1932, p140, Fig.94). They, too, may represent reflux influence.

Bracers are again a feature of the reflux movement (see p. 324).

In the Peninsula, when they occur in datable contexts, they are found with Argar material (there seems to be no find of a bracer which can be dated to an earlier period). It will be noticed that the usual type of bracer in Spain and Portugal is one with two perforations, those with four or more perforations are uncommon but do exist (e.g. Islote de la Torre).

A sickle, consisting of several small serrated flint blades mounted in a wooden haft, was found at Mas de Menente, Valencia. Similar small flint blades are known from El Argar and related sites in the region. Childe, who has studied this type (Childe, 1951), shows that it was a well-known type in early times in the Near-East.

A horned alter was found by Siret at El Oficio (Siret, 1893, p.69-70, Fig.288) and has been compared with an alter of L.M. III date from the Palace of Minos in Knossos (Evans II, 1928, p.336 and Fig.189) which can be dated to about 1400. Horned altars were, however, a well-known feature of east Mediterranean civilizations and are known from a comparatively early date (Seton Lloyd and Mellaert, 1957, p.29 and Fig.3 Beyce Sultan).

e. Burial Types

The use of cist graves becomes widespread in the Peninsula during the bronze age. The possible origins of this grave type have been considered in an earlier chapter.

Pithos burial is a completely new element in the prehistory of the Peninsula and it is found only in a very restricted area of south-west Spain. It was possible to show, at sites where both pithos /

pithos and cist burial was practised, that the custom of burying in a pithos arrived later than the custom of cist burial, though the two appear to survive side by side for a considerable time.

In Anatolia and Syria, pithos burial goes back to the third millenium, but Val Caturla in a recent article has shown that it is also known from early bronze age sites in the Aegean (Val Caturla, 1946 - e.g. Pakhyamos, E.M. III in Crete, Sesklo and Rahkmani in Greece, and in Leukas, where cist and pithos burials were found in the same grave mound; Dörpfeld, 1927, Pl.13; Evans (1958, p.67), quoting Childe (19 - 4th Dawn, p.69), suggests that these graves may be in use until the early Sixteenth century B.C.) Val Caturla quoted further examples from middle and late bronze age times in Crete (e.g. Knossos, which is M.M. II (Evans, 1921, II p.554), Mochlos, Agios Nicolaos, Gurnia, Tourloti, all L.M. I and Atispadhais which is L.M. III). More recently pithoi containing one or more crouching skeletons were found alternating with dressed blocks in the enclosure wall (2 m. high) which surrounded a middle Helladic tumulus at Ayios Ioannis, between Platanos and Papoulia Pylias in western Messina (Young ed. 1957, p.4) and in 1958 Lord Wm. Taylour excavated a grave circle near Pylos which contained burials in both cists and pithoi (unpublished information given at a lecture in Edinburgh, Nov. 1958). Evans (1958, p.68), suggests that the appearance of this custom in south-east Spain may be due to a continuation of the movement of people which was responsible for the establishment of the Milazzese-Thapsos culture in Sicily, which he considers to have begun at the end of the Sixteenth or the beginning /

beginning of the Fifteenth century B.C. Brea (1956, table), however, dates the beginning of the Thapsos-Milazzese cultures at about 1450 on the ground of association with pottery of late Helladic III A and B style; and because the earlier bronze age culture - the Capo Graziano - is associated with Mycenaean pottery of middle to late Helladic I-II styles. The date for the beginning of this culture in Sicily seems to be firmly tied down.

A cemetery of the Milazzese-Thapsos culture at Milazzo was found to contain pithos burials (Brea and Cavalier, 1956, p.59-60). The pithoi are flat bottomed globular pots with cylindrical necks with either one or six handles, and do not resemble the Argaric ones, but at La Portella, Salina (Cavalier, 1957, p.9 and 13), a settlement site of the Milazzese-Thapsos culture (and contemporary with the Milazzo cemetery), segmented faience beads were found (op. cit. p.12). Sherds of Late Minoan IIIa pottery were also found at this site. A further parallel may also be noted in the presence in grave 6 at Plemmyrion of spiral copper beads (Brea, 1953-4, Fig.20, 5 and 6) which at Argar were found only in the pithos graves. Thus it seems very probable that the arrival of pithos burial in Argar is due to a westward spread of people who practised this form of burial. The effects of this movement are also to be seen in Sicily.

Before leaving the subject, mention must be made of the presence of pithos burials in Aunjetitz cultures. There are three from the cemetery at Kelheim (Behrens, 1916, p.65f. Pl.V and VI) and Neustupny lists at least ten from Bohemia (Neustupny, 1933, p.14) and there is a probable one from one of the graves at Angheln Ruju.

In /

In all these cases, the pithoi are used for the burial of children. There is as yet no instance of adult pithos burial known in Aunjetitz cultures. How this custom arrived in Aunjetitz, it is impossible at present to say, but, owing to the fact that this site is restricted to children, it cannot be regarded as having any direct connection with Argar. In fact, it seems to be earlier than at Argar where pithoi are found in the later phase and Aunjetitz must correspond to the cist grave phase at Argar.

The rock-cut tombs at Alcaide must have been used during this period, because Argaric material has been found in them. This raises a problem of their origin; Evans has very rightly likened them to the Thapsos graves of Sicily (Evans, 1958, p.70) and pointed out the difference between them and the rock-cut tombs of Palmela, Alapraia, etc. There is a problem of dating involved, however; the Thapsos graves have been dated at 1550 at the earliest; now Argar with its connections with Reinecke A 1 must be in progress by about 1700-1600 and, if it is true that the material at Alcaide is pre-argaric, that places Alcaide far earlier than any Thapsos tomb. One must await with interest the publication of the finds for this necropolis.

Recent discoveries of rock-cut tombs at Cerro del Greal (see p.59) and Murcia, show that early rock-cut tombs are not confined to the west of the Peninsula. The trapeze-shaped entrance to the Greal graves is more like the square entrance to the Alcaide tombs than the port-hole entrances to the Portuguese ones.

f. Mining

This survey of bronze age cultures and their wide distribution would be incomplete without some reference to evidence of mining activity. Reference has already been made to the finds from Milagro, Folgadoura, Aljustrel and S. Juliana mines and to the activity discovered near the mine at Riner (see pp.432-3, 420, 405 respectively). Serra i Rafols in 1924 published an article showing the evidence for prehistoric mining activity in the various parts of the Peninsula. The chief centres of such activity were Huelva, Sevilla, Cordoba, the Alentejo and the Algarve, and Asturias.

In Huelva, remains of old workings are known, in some of which skeletons have been found. Stone tools have been found in mines. The most important find was that of forty hammers from the mine at Monte Romero, Almonaster, where a bronze age cist grave cemetery has also been found.

In Sevilla, the main areas which indicate prehistoric mining activity are Carmona and Mairena del Alcor.

Estacio da Veiga reports finding stone and copper implements in several mines in the Algarve (1891, p.83).

Other mines which also show signs of having been worked in prehistoric times are Rioja (Logrona), Torrijos (Toledo), Sotarrenya (Alicante) and Pobla de Segur (Cataluna). It is very difficult to attempt to date the beginning of these workings because the stone tools found in many were used throughout the bronze age and the iron age, but certainly finds of Alentejo axes in mines such as Milagro
or /

or Juliana indicate that some at least of the mines were being exploited from the bronze age onwards.

N. CONCLUSIONS

At Argar, it was possible to distinguish two main phases. The first is characterised by cist burials, halberds, riveted daggers of types V and II, v-perforated buttons and gold objects. It is possible to suggest a south German origin for most of these types and it was considered probable that most of them arrived in south-east Spain as a result of the reflux movement.

The second phase is characterised by pithos burial, daggers of type I, swords, silver diadems, and segmented beads, most of which can be shown to have an east Mediterranean origin. The faience beads from Fuente Alamo, though found in a cist grave, were associated with objects typical of the pithos phase at Argar and, for this reason, can be regarded as contemporary with it.

The term Argar culture then, as generally used to mean a bronze age phase with riveted daggers, splayed axes, diadems, pithoi, etc., is being used to cover two different things. The term is best restricted, as Tarradel suggested, to the "pure" Argar culture of south-east Spain but, rather than settlement types etc. (which no doubt were important and distinctive), the criteria for distinguishing the Argar culture should be the elements characteristic of the pithos phase. The term Argaric bronze age when used for the rest of the Peninsula, can only denote contemporaneity with the culture /

culture at Argar (and if the term pure Argar applies only to the pithos phase, then it must denote contemporaneity with it) and cannot be taken to mean an actual colony of pure argaric culture. To avoid confusion, it is permissible to term the cist grave phase Argar A and the pithos phase Argar B and the later phase when pithos graves and cist graves contain similar material would be Argar A/B, thus any reference to the Argaric bronze age could signify contemporaneity with the whole cultural succession as seen at Argar, when dealing with cultures which are not obviously connected with Argar A or B, and in cases where it is obvious the term Argaric A or Argaric B cultures can be used.

The terms Argaric A and beaker reflux should not be considered synonymous. Argar A is an established culture in south-east Spain with certain characteristic features which arrive as a result of the reflux movement. The term reflux can only indicate a movement of people and/or ideas which took place towards or at the end of the beaker period in south Germany. It is characterised by a spread in a north to south or east to west direction and by the arrival of south German features and ideas in southern and western areas. This movement seems to have consisted of various waves, but it forms a distinct horizon in most areas.

The other most important areas in the Peninsula are the North-west and the Alentejo.

In the North-west, there are signs of a vigorous local metallurgical industry which specialised in Alentejo type axes, which are very similar to the British axe types. There are, in fact, two axes /

axes in Portugal which are known to be made from Irish copper. Further contact with Britain is suggested by the Portuguese halberd type. There are obvious contacts with Brittany, too, as shown especially by the gold work and the sword types. Altogether, the evidence suggests that there was considerable intercourse between these three areas.

In the Alentejo, there are also signs of an active industry, judging from the number of Alentejo axes which have been found. Foreign contacts are less noticeable, but the battle-axe types and the sword type represented on the grave slabs suggests contact, through the north-west of the Peninsula, with Brittany.

It must be added that these grave slabs bear no relation to the probably better known ones from Extremadura because the motifs are so different (Ramon and Fernandez Oxea, 1951). One Extremadura slab actually portrays a warrior clad with a horned helmet which is very reminiscent of the bronze warrior statuettes from the late bronze age in Sardinia (e.g. Bosch Gimpera, 1932, p. 250, Fig.260). It is, however, possible that the Extremadura cists are a later continuation of the Portuguese culture.

In Cataluna, there was a local bronze age culture which seemed to be basically a mixture of dolmen tradition and reflux influence. The thumb-handled pots indicate some contact with north Italy.

Elsewhere, the indigenous population seems to have survived and often shows evidence of the reflux movement. In Valencia, the local bronze age was individualistic but does not seem to have had a very active metallurgical industry. In Granada, there seems to have /

have been some exploration and settlement by Argaric people. In the south of Spain and Portugal, there is evidence of mining activity and the cist grave cemeteries may be graves of local or immigrant miners.

With regard to the relative and absolute chronology of all these cultures, a firm date for Reinecke A 1 would give a date from the reflux movement and hence the beginning of several local bronze groups in Iberia.

The beginning of A 1 is usually dated to about 1800 and A 2 perhaps about 1700. Thus the reflux movement must have begun some time before 1700 as it shows features characteristic of R.A. Ia phase and never features typical of A 2.

By using the faience beads, the date of about 1400 is obtained for the pithos phase at Argar. This is the phase containing the swords and the swords derive from Breton daggers. A Breton dagger (of unknown type) was found with a faience bead in a dagger grave of Giot's "second series". Further confirmation of this dating for the Breton graves has been obtained from a carbon 14 date for the tumulus of Kervingar, Finistere, which was 1350 ± 50 B.C. (Antiquity XXXII, 1958, p.194).

It is impossible to estimate a date for the end of Argar as no datable finds are known and no culture intervenes between Argar B and the urnfield invasions. Similarly, in the west of the Peninsula this phase of the bronze age would appear to survive until the floruit of the palstaves.

The implications of these dates for the various parts of the Peninsula can be appreciated from the following chronological table.

CONCLUSIONS

This thesis has involved the study of four major phases in the prehistory of the Peninsula. These are the neolithic period, the early bronze age, beaker times, and the Argaric bronze age. As a result of this study, it is possible to see the relationships between the cultures known during these different phases.

A. THE NEOLITHIC CULTURES

The earliest known neolithic group appeared to have been the impressed ware group, which spread along the coast and settled particularly in Cataluna, Valencia, southern Spain, and the Tagus area. It was uncertain whether the cardial and the non-cardial impressed wares were to be distinguished chronologically, but there was a suggestion that, in the Peninsula, cardial ware may have been slightly earlier in date. There was obvious evidence of the survival of these groups, especially in Valencia and southern Spain, and probably in the Tagus area, until later times. There were signs that they were contemporary not only with the Almeria culture, but also with the L.M. I and the V.N.S.P. I phases.

The Iberian impressed wares had close parallels in the south of France, but, beyond that, it was difficult to point to exact parallels, and thus the problem of the origin of impressed wares in the Peninsula must remain an open question. There was no internal evidence for the dating of this neolithic group, but it must be earlier than 2500 B.C., which is the date for the beginning of the early bronze age. When evidence for other areas outside the Peninsula /

Peninsula is also taken into account, a date of about 3000 B.C. must be assumed for its arrival in the Peninsula.

The fosa grave culture in Cataluna showed little signs of contact with the cave culture of that area, but it was possible to show that it had slight contact southwards with the Murcia-Alicante cave culture and with the Almeria culture. It was a surprisingly uniform culture and did not seem to have survived in a degenerate form in the region. Its foreign contacts were obviously with the 'neolitico medio' phase as represented by Arene Candide. Chronologically, it must have been earlier than Los Millares, because it showed only very slight contact with the early phase at that site, and it must have been approximately contemporary with the second level at Arene Candide. This makes a date of about 2700 - 2500 B.C. probable.

The caves of Murcia and Alicante were particularly interesting because they showed contact with the south Spanish and the Valencian caves, and also with the Almeria culture and the earlier phase at Los Millares. There was also indication of contact with the fosa grave culture. The variety and richness of finds in these caves suggested that they may have lain across an important route-way in prehistoric times. There was a suggestion of interesting connections with the Chassey-Cortailled cultures, which may have been due to the fact that both cultural groups drew from a common source farther to the east, and not that there was any direct relationship between the two. With regard to chronology, this group is obviously contemporary with the Almeria culture and with the /

the first phase at Los Millares, and thus a date of about 2600 - 2300 B.C. is likely.

The Almeria culture, which was centred in south-east Spain, was shown to have contacts with the south Spanish impressed ware groups, the later Catalan cave cultures, the fosa graves, and the Murcia-Alicante group. The culture itself was divided into two groups. One group had a very indigenous cultural assemblage and the other was characterised by exotic features which were probably derived from the eastern Mediterranean. It could also be shown that the main part of this culture antedated the beginning of Los Millares for some time. A date somewhere between 2700 and 2600 B.C. is probable for the beginning of this culture.

The Portuguese dolmens, particularly of the Alentejo, appeared to have originated as a result of a westward movement of the Almeria culture, which may have been caused by the arrival of the Los Millares people. There was no convincing evidence to suggest that the small dolmens, or, in fact, any dolmens, originated in the Alentejo or elsewhere in Portugal. With the exception of the flat idols, etc., which indicated a relationship with the Almeria culture, this group showed little contact with other cultures. A date for the beginning of the Alentejo dolmens depended on the dating of the Almeria culture. On the probability that it was the arrival of the colonists at Los Millares which caused the Almerians to spread westward, it is difficult to date the Alentejo dolmens much before 2500 B.C.

B. THE COLONIES

The early bronze age in the Peninsula was initiated by colonists arriving from the east Mediterranean. They then set up heavily defended settlements. Such sites were known from south-east Spain at Los Millares and Almizaraque, south-west Spain and Portugal at Mesas de Asta and Alcala, and from the Tagus area at Vila Nova de S. Pedro. Finds from all these sites were remarkably uniform and indicated the introduction of several new features, of which the most important was metal-working. There were excellent parallels with the Aegean area in the finds from these colonies, which permitted an estimation of the date of their beginning to be made. It looks as though Mesas de Asta is the earliest site and it may begin about 2700 - 2600 B.C. The others can all be dated to approximately 2500 B.C.

At the same time as the colonies were flourishing, the indigenous Almerians survived in south-east Spain and developed larger graves. These same people were probably responsible for the Granada dolmens, which showed slight contact with Los Millares. In Valencia, the Murcia-Alicante caves continued into this period. In the Tagus area, an indigenous population, which seemed to have owed much to the Almeria/Portuguese dolmen culture, and probably also to the earlier impressed ware cultures, was in close contact with the colonists at Vila Nova de S. Pedro. In the Alentejo, the dolmens continued in use and some of the bigger ones were probably built about this time. There was some evidence of contact with Vila Nova de S. Pedro about this time. The Alentejo dolmen people may have spread /

spread north into Beira and Salamanca and have started building dolmens in these areas. There was a possibility that the colonists of Vila Nova de S. Pedro moved up the Tagus and reached Guadalperal and Entreterminos.

C. THE BELL BEAKER CULTURE

The colonial phase was suddenly curtailed by the appearance of the beaker culture. There was evidence that Vila Nova de S. Pedro was actually destroyed by the beaker people. An examination of all the evidence available suggested that the beaker culture was the result of the intercourse between the colonists at sites such as Vila Nova de S. Pedro and the indigenous people around the Tagus mouth. The maritime and the bowl beaker could be accounted for in this way. The carinated beaker, on the other hand, was thought to be a result of the contact of the impressed ware people, and especially of the Zuheros group, with the colonists at Mesas de Asta in south-west Spain. The beaker people had then spread out rapidly in all directions and reached north Africa, the Mediterranean islands, and west and central Europe. The details of this spread were not discussed, as it was beyond the scope of this thesis.

Recently, Sangmeister has been able to show that, besides the primary west to east movement of beakers, there was also a later east to west movement, which arrived in Spain and brought with it features such as cord-ornamentation and v-perforated buttons, both of which can be paralleled in later beaker contexts in central Europe /

Europe. This reflux movement, as it is called, was discussed with particular reference to the Peninsula, where it was seen to have been an important element.

On the basis of foreign parallels and comparisons, it is possible to date the first west to east spread of the beaker culture to about 2000 B.C., which means that it must have developed in the Peninsula before that date. A date of about 2100 B.C. is suggested for the beginning of beakers. The date for the reflux east to west movement can be dated, on the basis of parallels with the Reinecke A 1 cultures, to 1800 - 1700 B.C.

D. THE ARGARIC BRONZE AGE

When the culture of El Argar was examined, it was found that the reflux movement had played an important part in the formation of the first phase at El Argar - Argar A - and it was possible to amplify Sangmeister's original definition of reflux elements to include halberds and possibly also copper rings and bracelets. Reflux features were also noticeable in the bronze age of other areas of the Peninsula such as Cataluna and north-west Spain and Portugal, though, in all cases, the earlier populations probably formed the basis of the cultures which were influenced by the reflux.

In areas such as Valencia and Granada, it was obvious that the local bronze age developed with external impetus from the local neolithic/early bronze age populations who were still surviving in the area. The same was probably true for the Alentejo, where an active metal industry grew up. Here, however, the dolmens fell into disuse /

disuse and the custom of cist grave burial was taken over. In the Algarve and south-west Spain, a probably strong indigenous culture exploited the mineral resources and also took over the custom of cist grave burial. In north-west Spain and Portugal, which was probably first settled towards the end of the V.N.S.P. I period by dolmen builders, moving slowly northwards, there was a vigorous metallurgical industry which had close contact with Brittany and the British Isles. The Tagus area, which had been so significant in earlier times, was no longer important and there were signs of only sporadic settlement and mineralogical activity. With the exception of the south-east, all these areas appeared to have the same culture until later bronze age times when palstaves and other new types appeared.

In the south-east, however, there appeared to have been a small invasion of people from the eastern Mediterranean, who brought the custom of pithos burial with them. This has been called the Argar B phase. After a short period, friendly relations seemed to have been established between the original Argar A population and the newcomers, represented by Argar B, and there was a phase called Argar A/B, when both cist and pithos graves contained similar grave goods.

There was no direct evidence of the end of the Argar culture, but it did not seem to have survived until the urnfield culture, which arrived in the area later.

A date for the beginning of El Argar, and for the bronze age in other areas, depends on the date of the reflux movement which, as has /

has been suggested, must be dated to about 1800 - 1700 B.C. The Argar B phase can be dated, on the basis of the faience beads, to about 1400 B.C. Otherwise the bronze age cultures must have survived with little change until late bronze age times.

